AMERICAN FORESTS

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AMERICAN FORESTS

VOLUME 51 SEPTEMBER, 1945 NUMBER 9

CONTENTS

THE COVER
A Blazing Tillamook Mountainside
Photograph by Les. T. Ordman

American Forests

Published monthly by

THE
AMERICAN FORESTRY
ASSOCIATION

919 Seventeenth Street
Washington 6, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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THE FOREST EXCHANGE . . .

The True Nantahala

SIR: I have read with both interest and appreciation the article "Nantahala . . . Land of the Noonday Sun," by Dorothy Ferrell Hayden, in your July issue.

Withal, this assignment was most gratifyingly handled. However, I find it necessary to point out one misstatement, namely, ". . . in the Nantahala National Forest there is now a stand of some 6,000,000 board feet of merchantable timber."

The record stands that in the past twelve months, ending June 30, 1945, 59,000,000 board feet of timber were cut from the forest, or roughly ten times that credited by the author as totally available! Further, that in the three and one-half years since Pearl Harbor, 151,000,000 feet have been cut from the forest.

Be assured that we on the Nantahala take justifiable pride in the beauties and ideal recreational facilities herein afforded. However, during this period of national emergency our greatest satisfaction lies in the volume of timber which has moved from the Nantahala toward the war effort, for thereby we have adhered to the major war objective of the U. S. Forest Service. In this vein, it might be added that over the past few years we have had a number of sales in which the individual yield per sale approximated the above quoted 6,000,000 board feet. Further, that in fiscal year 1945, we consummated 299 timber sales transactions, both large and small, and that currently cutting is being accomplished on some 280 sales.—*E. A. Schilling*, Forest Supervisor, Nantahala National Forest.

Forestry Schools Please Note

SIR: Each year in forest protection class I acquaint the boys with the essentials of a fire protection sign and ask them as a matter of practice to submit slogans. Occasionally, I am pleasantly surprised because they present some good ones. I thought it possible you might be interested in two which I received this year: "Keep the Forests Out of Mourning" and "Keep the Home Fires Burning —But Not in the Forests."

Since I have not seen these slogans elsewhere, I presume them to be original with the students.

I have often thought that if all forestry schools did this sort of thing it might be possible to secure some really good slogans, and the scheme might be encouraged by one or two modest cash prizes.—*Professor James D. Curtis*, University of Maine, Orono, Maine.

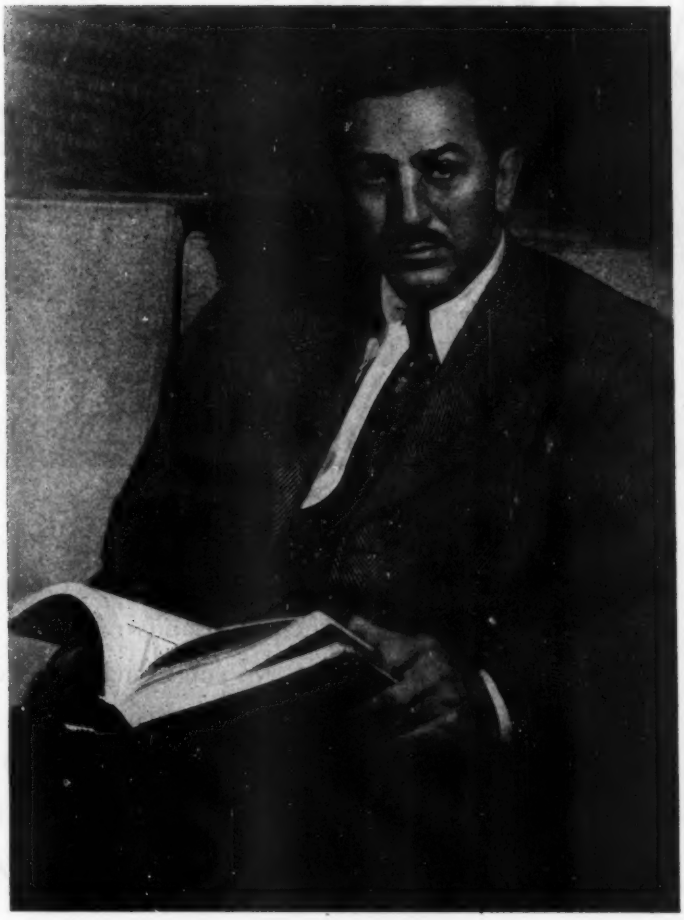
One for the Ranger

SIR: My enthusiasm almost runs away with me when I look at the remarkable cover picture on the July number. Do all forest rangers look like that? Such coordination and balance between horse and man as they stand on the "edge of the world"! — *Mrs. Verner White*, St. Louis, Missouri.

My Favorite Tree

By WALT DISNEY

Famous Artist and Motion Picture Producer



When I am asked to name my favorite tree, I must reply: "I have no favorite. I love all trees."

In fact, trees are a consuming subject at our studio today for we are working on a picture based on Joyce Kilmer's immortal poem, *Trees*.

Research has impressed and delighted us with the endless variety of trees, with the way each one grows, and takes shape; how each adorns and enriches the lives of humans and animals, how each in its proper place and condition is something to love and admire.

As people change and grow, so does their preference in trees, we find. They go from one to the other and back again, discovering new beauty in them as they do with poems, music, pictures and everything in the world which, like trees, give meaning and value to life.

Artists can capture the majesty of the redwoods and the frailty of the aspen, but when Kilmer wrote: "Only God can make a tree," he said it all.

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BUY MORE WAR BONDS

The Trumpeter . . .

This rare swan—the largest living species of North American waterfowl and so lately near extinction—was pictured on Red Rock Lakes Migratory Waterfowl Refuge in Montana.

EDITORIAL

Getting Forestry Into the Woods

CERTAIN findings of the Forest Resource Appraisal now being made by The American Forestry Association suggest that an ounce of woodland owner interest may be worth a pound of public control. This does not mean that forest practice rules are valueless; on the contrary, where such rules are in effect, whether self-imposed or State enacted, there is noticeable improvement in harvesting methods and keener awareness of the importance of forestry. Yet there are sore spots in our forestry situation which blanket rules simply do not reach, which only the landowner or person actually managing the area can cure.

One of the most serious developments now being observed by foresters is the so-called *deterioration* of timber stands through replacement of conifers with broadleaf species. In hardwood climax forests it may be inaccurate to describe this trend with such a term, but the fact is that softwoods are the more sought after by industries and other wood users. Broadleaf species continue to move in upon cutover areas formerly occupied by pine, spruce and balsam fir, and apparently none of the cutting rules so far devised can do more than postpone the day of reckoning. Individual conifers remain a little longer on the ground, but they finally disappear. Yet experience has shown that if the owner of the land cares enough about his forest to do the right things at the proper time, he can keep the hardwoods out and the softwoods in.

Another twist to this particular problem concerns the use of fire. Statutory fire protection can scarcely distinguish between burning as a tree destroyer and burning as a silvicultural tool. There is increasing evidence that fire is useful possibly under certain circumstances necessary, in the perpetuation of pine stands upon the coastal plain of the South. Since one would not advocate abandonment of controls over burning, the answer may well be to encourage interested forest owners to use fire judiciously and under proper safeguards.

Farm woodlots loom as tremendously important factors in the nation's forestry setup; they have contributed an astonishing volume of wood during this war. Naturally we are interested in how they are being managed. It is impossible to generalize about present day management of farm woodlands. In places cutting has been ruthless to the point of devastation, yet elsewhere one finds hoarding of old growth amounting to stagnation. In the Middle West, particularly, the widespread habit of grazing woodlots has resulted in virtual elimination of young reproduction over large areas. Lump sum selling of timber to operators who take everything of merchantable size persists in many localities, and frequently, between such cuttings, the woodland owners pay no attention to their stands, thus failing to promote maximum growth or even to salvage trees which are crowded out. Yet, notwithstanding these evidences of inertia, there are convincing signs that farm woodlot owners offer a great present opportunity for forestry education to pay dividends.

Eight years ago, at a forestry conference held in Washington, D. C., the statement was made that it was unfair to declare that education would not solve our forestry problem, since education never had been tried. Today American Forestry Association field men report that wherever owner education is being tried, intelligently and intensively, results are noteworthy. Forestry education as they see it is a twofold task; first, the landowner must be led to wish to do something, and second, he must be shown what he can do that will produce results of value to him. They do not distinguish particularly as between small landowners and large, believing that if all can be reached a great percentage will respond. There are places where ninety percent of woodland owners are practicing good forestry, and there are other localities where fewer than one man in ten even knows the meaning of the term. And in most cases such conditions are related to the extent and quality of forest education available in these areas.

Such facts present a challenge to American foresters and to federal and state legislative bodies. If forest education is working wonders where it is being properly applied, why not apply it everywhere,—and at the earliest possible moment?

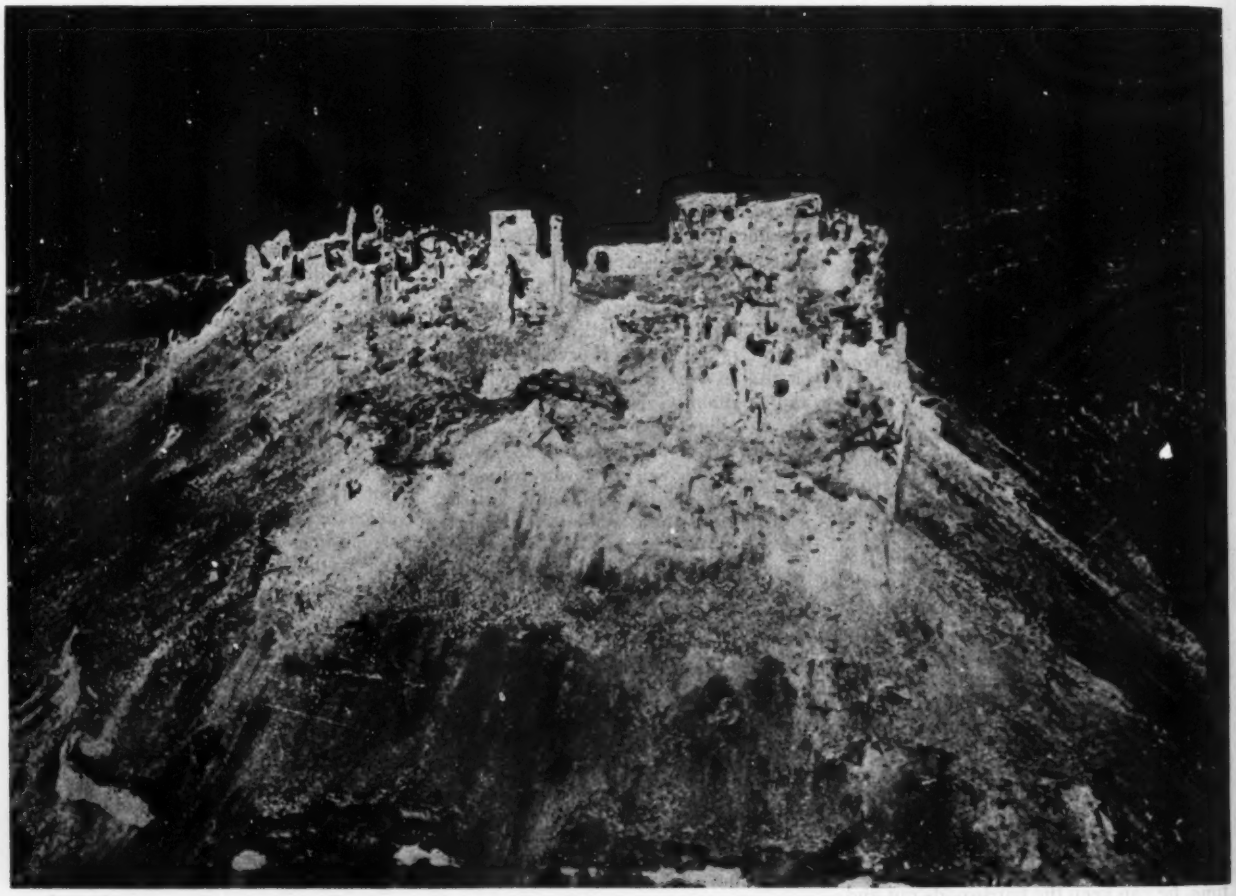
Certainly the time is ripe for doing whatever can be done to increase timber production for the postwar period. And without doubt, forest landowners, including both large industrial companies and millions of farm woodlot proprietors, offer a direct approach to practically all of America's privately held forest area.

Forestry instruction, comparable with present day agricultural extension work, should be made available in every timbered township and county in all the states. The problem is not one of *what*, but of *how*. The material for use in arousing interest and giving sound instruction is at hand, but the most effective methods are not so well established or recognized. A truly staggering variety of instructing agencies are in the field, professing to be working at selling and teaching forest management to landowners. For example, in Mississippi, thirty such agencies are giving or attempting to give instruction and assistance to forest owners. Eleven are federal agencies or activities, six are state supported, and the others are of private origin.

Wherever they may be found such agencies vary widely as to their methods and effectiveness. Some work at long range, while others make personal contact with landowners on the ground, after the manner of the farm extension worker. Space does not permit a summary here of the comparative results claimed or substantiated by these various agencies and programs. The point is that the whole forest education establishment, as it now stands, needs to be examined and overhauled, with a view to selecting sound principles and effective methods for incorporation in a workable national project. If and when such ground-work is laid, forestry, we think, will go forward to accomplishments similar to those now being achieved by the agriculturists.

A FORESTER LOOKS AT ITALY

By NELSON C. BROWN



Famous Abbey and Monastery at Monte Cassino in the Appe nine Mountains as it appeared after the final Allied assault

THE triumphal march of the Allied armies on Rome and later to a more or less stabilized line in the high Appenine Mountains between Bologna and Spezia, left its mark on the forests of Italy. So did the years of German occupation. But except in some areas of heavy overcutting and where the front became stationary and fighting was continuous and severe, this mark is not too black. It can be erased within a reasonable time under a well planned program of forestry.

At least this was my impression after inspecting a good part of Allied controlled Italy during the winter and spring months of 1945. And it was the impression of other foresters familiar with conditions at that time. I found few cases of clear-cutting due to urgent war needs; and where rapid advances were made by our armies there was relatively little forest damage. Almost complete destruction of timber stands was noted, however, where the front was stabilized for any length of time. Between Bologna and Spezia, for example, forest areas were ruined by shell fire and other procedures incident to modern warfare.

Also, I was impressed by the definite contribution Italy's forests made to our winning of the war. Although possessing relatively few forests, Italy was called upon to supply the Allied armies large quantities of lumber—lumber for barracks, artillery emplacements, bridging, trench shoring, dock repairs, railroad ties and a thousand other items essential to warfare.

The British and Americans requisitioned more than 100 sawmills, a third of the number which normally operate in Italy, to produce lumber for the fighting front. These were largely in Calabria, far down in the Italian peninsula, which is the center of the lumber industry. The timber cut was black pine, along with some beech and silver fir. I found American, British, Italian, German, South African and even New Zealand types of sawmills cutting lumber, most of which was hauled by truck over roads that had been blasted and

War Has Taken Its Toll, But a Well Planned Program of Forestry Can Heal Many Scars and Help Italy Along the Road to Self-Sufficiency

ruined by aerial bombs and artillery. The railroads were completely ruined and until the spring of 1945 were practically non-existent.

Strangely enough, it shocked many Italians to see their trees cut, particularly in some of the older forests. In this respect, the circumstances of war seemed to escape them completely. Perhaps the fact that but 20 percent of Italy is in forest cover, and that four-fifths of all wood produced is required for fuel—Italy has practically no coal—had much to do with this attitude. Italy's lumber and cellulose wood pulp requirements must largely be imported.

When several centuries back forestry emerged as an important phase of the economic system in Europe, many countries, notably France, Switzerland, Germany, Finland and Sweden, made magnificent forward progress in the management of their forests. But the same cannot be said of Italy. In part, this perhaps is explained by the fact that Italy, although an old civilization, is a relatively young country, being unified and organized since 1871 under Garibaldi.

Yet there are excellent examples of forest management in Italy. At Camaldoli, Boscolunga, Vallombrosa, Pistoia, Calabria and other places are excellent stands of silver fir that compare favorably with any forest in Europe. But Italy, a country of mountains and steep terrain, has only isolated "islands" of this type of forest. Ever since the days of Julius Caesar her forests have been going back and many denuded areas have become so seriously eroded that reforestation is conducted only at considerable expense.

About 80 percent of the timber in Italy is hardwood, principally oak, chestnut and beech. The most important softwoods are silver fir found in the higher altitudes of the Appenine Mountains, Norway spruce and larch in the Alps and northern Italy and six varieties of pine in the lower regions, especially in the southern province of Calabria.

In forest ownership, the state owns 3 percent, the communities 31 percent and private owners 66 percent. There are some excellent examples of community forests, particularly in Calabria, a number of which normally yield sufficient revenue to support the communities which own them, thus making them partially or totally tax free. In many of the 63 provinces, almost the entire ownership is represented in community forests which generally have been successful—successful not only in producing wood, but in preventing erosion, ameliorating the effects of floods and in maintaining proper water levels in the agricultural valleys below.

Oak and chestnut are cut on 20- to 30-year rotations. I visited the forest of Prince Borghese on the Anzio beachhead battlefield. Due to the extreme urgency of getting out wood, this forest was being cut on a 9-year rotation, although a few of the larger and better trees were left for a 60-year rotation. These trees, known as "standards," are intended to be used to seed the areas and assist the sprout reproduction.

Italy has a large Royal Forestry Corps in the Ministry of Agriculture and Forests, with regional or provincial offices in each of the provinces. In the Fascist regime it was militarized and

What a forest looks like after armies have fought over it. Bombs and shellfire completely wrecked this and other forests in the Appenines between Bologna and Spezia

used entirely too much as a safe and easy resting place for some of the elderly and faithful members. So it had become overloaded in personnel, unwieldy and inefficient.

This was the general condition when the Allied armies fought their way across Sicily and up the Italian peninsula. And war being war, the field commanders did not hesitate to dip into Italy's limited forests for the timber they needed—when and where they needed it.

For example, the Italian royal family had for centuries enjoyed the Royal Hunting Forest of several thousand acres near Leghorn. It contained many big pines—tall, fairly straight, almost limbless trees running from 20 to 40 inches or more in diameter. There the king and members of royalty could hunt deer, shoot birds and rabbits and ride unmolested by the common herd.

The British and American armies were quick to cast envious eyes on this forest, particularly on those big trees which they visualized in terms of much-needed barracks, planking, bridging and trench shoring. So two large American sawmills soon were ripping up the big pine logs at the rate of from 25 to 30 thousand board feet a day.

As Chief of the Forestry Division of the Allied Commission at Rome, I requested the Director General of the Royal Forestry Corps and his advisors to accompany me to the forest and settle on the ground any issues that might arise as a result of this cutting. These foresters agreed the timber was over-mature and that for the best interests of a permanent forest it should have been harvested 20 years or more ago. They further agreed that by a carefully worked out plan of selective logging, mature trees could be removed without undue harm to the forest. Then

(*Turn to page* 450)

A timber-felling area in a chestnut forest. T

Italian axmen salvage chestnut trees damaged by shellfire or badly riddled with shrapnel and bullets

Typical of Italy's old and well mana
In many cases they were tapped by

umps will sprout up and form the next stand

Faggots for the ovens that bake Italy's bread

ests is this stand of silver fir at Boscolunga.
ancing Allied Armies for poles and timbers

In an abandoned foxhole below Rome, Italians saw out boards with a sash saw, used since early Roman days

BREADBASKET SEASONED WITH SAGE

By GRACE V. SHARRITT

Reseeding Experiment Promises the Return of Grass—and a Prosperous Livestock Industry—to the Sagebrush Country of the West

AS FAR as the eye could travel there was nothing but sagebrush. It silvered the Utah landscape for miles and miles, meeting the horizon eventually in a fringe of mountains. You could smell its pungent fragrance. Your senses delighted in the feel of a primitive land, unfenced, rugged, free. You reveled in the deep stillness of wilderness country. You could breathe deep, think deep. This was America, the western rim of the United States.

Occasionally a sage sparrow flitted erratically among the shrubs and then disappeared from sight. Once a reconnoitering hawk soared slowly in the distance. But that was all—just sagebrush. Acres and acres of a plant that had gradually usurped the soil once given to succulent grasses. No plow had ever touched this virgin loam. No man had ever dared break this land to homestead. No woman had nurtured her children beneath these blue skies nor sung as she planted a garden in the springtime.

Yet this was fertile land. Why, then did not children romp happily where

there was so much space in which to play? Why did not a man furrow these fields? Why was this land left to waste when millions and millions of the nation were crowded into cities and towns and small, overtilled farms? Why could not all this soil be put to use? Now, if ever, when the world needed a breadbasket, should not each acre be made to yield?

That was what you thought as you drove over the dirt road which was a mere slash into the sage. That was what you wondered as you smelled the spicy incense, felt the sweet silence, and watched the sun filter its gold into scarlet shadows.

Then suddenly the road swerved uphill onto a mirage—an oasis of grass in sagebrush country. A meadowlark was singing from a fence post. Robins fluttered busily on either side of the primitive trail. From a juniper tree a mountain bluebird lifted his voice to heaven. In the distance a mule deer bounded into view. And over the earth was grass, succulent green spears of crested wheatgrass.

Senator Abe Murdock inspects one of the reseeded areas he championed

You rubbed your eyes. The grass was still there and so were the meadowlarks, the robins, and the bluebirds. True, there was sagebrush dotted here and there among the clumps of good green food, but that was to remind you that it takes more than a harrow or tractor to eradicate a tenacious native plant.

What, then, was this miracle? What was the meaning of this happier land so different from that left behind, and still edging the horizon to right and left?

"It is a reseeding area of 500 acres," the forest supervisor said; "a 3-year experimental growth of grass which will revolutionize the West."

How sagebrush is conquered. White post marks end of reseeding plot—but not the spread of this hardy wheatgrass of the Siberian plains

It was manna! It was a breadbasket all primed to feed 500 head of cattle. It meant, just from this small oasis of grass set like an emerald among the thousands of acres of sage, an increase, within a month, of 20 thousand pounds of beefsteak and hamburgers. It meant more shoes and leather for pocketbooks. And it meant more silver to line those pocketbooks.

Here was a basic wealth! Here was the cupped hand of the West offering food to the world, work for returning veterans and a stabilization program that can, in part, answer the burning question, "Will there be a postwar depression?"

For T-bone steaks from Utah can mean helicopters and automobiles from Detroit. The resurrection of grass in the sagebrush territory can mean more radios, powder puffs and warm socks. By virtue of the special reseeding item in the Agricultural Appropriation Bill, passed by Congress in April, it means that there is to be a new lease given to

(*Turn to page* 446)

More beef in the making. Areas planted to the succulent wheatgrass produce ten times more beef than the unseeded sagebrush range

REVEALING GERMANY'S WOOD SECRETS

U. S. Experts are Ferreting Out Technical and Production Secrets Developed by the Nazis in Their Futile Bid for World Domination

By ERLE KAUFFMAN

SHORTLY after Germany was beaten to her knees and forced to surrender unconditionally, Uncle Sam dispatched a corps of topflight technical and production experts to ferret out the secrets which Nazi propagandists at the peak of their early successes boasted would lead them to world domination. And high on the list of things this government wanted to know was whether or not German achievements in using wood as universal raw material were as far advanced as some were lead to believe.

This investigation still is in process. As this is written American technological experts are probing all phases of wood processing, conversion, modification and use developed by the Nazis. Yet enough is known to form primary conclusions—and these prick the bubble of Nazi technological supremacy just as the American GI on the field of battle exploded their myth of a master race.

Returning from Germany in mid-August, George W. Trayer, chief of the Division of Forest Products, U. S. Forest Service, and chairman of the forest products sub-committee of the Technical Industrial Intelligence Committee, set up to ferret out the Nazi war secrets, summed up the situation in these words:

"German wood technology is well advanced," he said, "but only in certain respects is it ahead of our own. For example, we found Germany out in front in the production of alcohol and yeast from wood sugar. But we know more about the reduction of wood to sugar. Needless to say, cultures of selected forms of German-made yeast have been sent back to this country for study."

Initial reports also indicate, Mr. Trayer said, that the Germans may have produced a nitrocellulose for explosives of superior stability qualities from low-grade sulphate wood pulps. But they are considerably behind this country in the hydrogenation of wood or its by-product lignin, despite the fact that they have made outstanding progress in the hydrogenation of coal—that is, its conversion to gasoline. In fact, he emphasized, Germany has hardly touched the study of lignin.

Reports reached this country that from 20 to 30 wood hydrolysis plants had been set up in Germany for the purpose of making alcohol or fodder yeast, he revealed. Actually, investigators found but five such plants, one—and the smallest—the original Scholler plant at Tornesch, near Hamburg. The Scholler technique, it will be recalled (see AMERICAN FORESTS for February 1944) was employed by wood chemists in the development of American wood sugar processes.

Three of the German plants were of the Scholler type—that is, they used a mild sulphuric acid solution to accomplish reduction of cellulose to sugar. Two were of the Bergius type, using a strong hydrochlorine acid solution. The Bergius process produces more sugar, but at a greater cost per pound.

These five plants, however, did not produce all of Germany's wood sugar, Mr. Trayer said. The government required that sugar in the waste liquors of all sulphite pulp mills be utilized, and rather large production of alcohol and feeding yeast came from this source. Alcohol was produced at mills using largely coniferous wood, yeast at the hardwood mills.

Mr. Trayer found little destruction from Allied bombing of such German wood-using industries as sawmills, pulp and paper plants, plywood and chemical plants. This he attributes to the fact that these industries were well dispersed and apparently not the subject of concentrated attacks. Only when a plant was near a railroad yard or the center of an industrial city was damage observed.

Questioned as to the general condition of German forests, Mr. Trayer brought out the interesting observation that Hitler may have been double-crossed by his own foresters and, as a result, an order to overcut the forests of the fatherland by 50 percent was never fully carried out.

Hitler, he said, if the story related by German foresters is true, set Germany's forest production figure at 150 percent of sustained yield, or 50 percent above normal rotation cutting. Apparently satisfied that Hitler was not too well versed in forestry techniques, the foresters got around his order by the simple process of manipulating sustained yield figures to an ultra-conservative low.

In general, Mr. Trayer said, German forests were found in good condition. The most severe overcutting was noticeable in areas of easy accessibility, particularly around cities and towns. This German foresters attributed mainly to transportation difficulties resulting from Allied bombing. And, paradoxically, he pointed out, these are the areas which must endure still further indiscriminate cutting. Civilian populations, seeking to prepare as best they can to fight hunger and cold this winter, are cutting wood for fuel wherever it can be found, and without restrictions. It was not uncommon, he said, to see men, women and children dragging small logs and branches along the bomb-cratered roads. German forest officers were powerless to stop these raids, even had they been so inclined, as they have been disarmed by the Allies.

The only observable neglect to German forests, Mr. Trayer reported, was the lack of thinning of very young stands. This was due, he was told, to a shortage of labor.

Actual war damage, he declared, should not exceed one percent of Germany's total forest resource. He observed but two areas, both less than 17 thousand acres, that were more than 40 percent damaged by fighting. These had been burned out by American troops to route out Nazi snipers and machine gun nests.

The forest products subcommittee of the Technical Industrial Intelligence Committe began making plans last January to enter Germany for a study of that country's war-inspired forest products secrets. The eight members of this subcommittee include representatives of the Army Air Forces, Army Service Forces, Navy, Foreign Economic Administration, Office of Strategic Services, War Production Board and the Department of Agriculture.

An estimated 200 Nazi-controlled plants, research institutions and technical persons were designated as "targets" from which information was to be obtained on about 50 forest products subjects. In general, however, investigation was broken down into seven broad fields—modified wood; all phases of gluing; the whole field of chemical utilization; pulp and paper; seasoning,

(*Turn to page* 457)

By early August, 150,000 acres were in red on the fire maps — three men had died

TILLAMOOK BURNS AGAIN!

By HAROLD OLSON

TILLAMOOK is aflame again. For the third time in twelve years fire is ravaging this superb timber-growing land in northwest Oregon.

As this is written, three men had died, 150 thousand acres were in red on the fire maps, untold millions of trees had perished, wildlife had suffered, and the end was not in sight. Fire weather continued. The first soaking rains of autumn were still possibly weeks away. A dolorous, brooding smoke pall hung over parts of five counties.

There were two major outbreaks. The first was the Salmonberry fire, between the Wolf Creek and Wilson River highways. This started July 8, of undetermined origin. On the afternoon of July 11, fire broke out in a logging operation on the Wilson River to the south and in scarcely more time than it takes to tell it, this fire had swept out of hand.

In mid-July there was hope of bringing the flames under control short of a major burn, but weather conditions went against the fighter crews and scores of spot fires began to dot the snag-studded hills. At times as many as 100 spot fires were known to be burning. At intervals the weather would turn for the better and the fires would quiet down, only to flare again on the wings of stiff winds whipping through blazing snags, relics of the two previous burns.

More than 1,200 men — protection crews, loggers, soldiers, sailors and high school boys — deployed against the flames in the early, critical hours but were unable to master the inferno. Many valiant stands were made along laboriously established firebreak lines, only to have the fire leap the barrier

overhead as the wind carried flaming brands and chunks from the tall snags. It was a case of "set up a line, lose it, fall back," again and again—a wearying and morale-sapping procedure.

On July 21 there was a brief interlude of rain and control hopes soared. But two days later dry winds fanned again at the embers. By the end of July fires were spread out on a 100-mile perimeter and were bulging out beyond limits of both the 1933 and the 1939 burns. Spot fires were here, there and everywhere.

Death struck on July 26. Joe Dillich, a civilian fire fighter, was killed by a snag he was falling in the Scoggins Creek area. An Army truck bearing negro soldiers from Fort Lewis, Washington, to the fire front overturned at a curve west of Clatskanie, Oregon, killing two men and injuring thirteen.

Under leadership of the state forestry department and the Northwest Oregon Forest Protection Association, which handles this region on a cooperative basis with the state, a well-organized suppression machine has been functioning against the fires. All available civilian fire-fighters were pressed into service, and reinforcements came on the scene soon in the form of 400 sailors from bases in the Columbia River region, 200 soldiers from Geiger Field, 200 soldiers from Camp Adair and 260 from Fort Lewis.

Overall command was placed in the hands of Dwight Phipps, assistant state forester, as chief. Ed Marshall, as chief scout, and W. F. McCulloch, as dispatcher, were his bowers. Two assistant fire chiefs were designated: John B. Woods, Jr., on the west side of the coast range and Cecil Kyle on the east slope.

Five camps were set up: Tillamook, Trask, Consolidated Timber, Balm Grove and Stimson, in addition to the dispatching camp at Owl Station on the Wilson River road just east of the summit. Each camp had a superintendent, a division boss and four or five sector bosses. Instant communication by radio and telephone was a potent weapon. All the tools of modern forest protection —tankers, bulldozers, portable pumps, shovels, back pumps, pulaskis, axes and saws—were put to use.

State Forester Nelson S. Rogers spent many anxious hours on the front helping to map strategy. Governor Earl Snell was out there too.

As the fires entered August, with the worst weeks of the season still ahead, losses in old growth, younger sawtimber, cold decks, felled and bucked timber, bridges and logging equipment were mounting into formidable figures. Foresters and landowners, however, reckoned the greatest loss in the destruction of millions of seedling and sapling conifers, mostly Douglasfirs.

Reproduction in the Tillamook burn had been spotty but nevertheless fairly good. Both previous burns had left scattered islands of timber and from these, plus occasional oldsters that survived, the forest had started to regenerate. While much of the land was still more or less barren, there were thickly stocked slopes bearing 2 thousand trees to the acre and more. Many such areas have been swept clean in this fire.

State Forester Rogers estimates that on the basis of incomplete surveys up to this year, 10 to 15 percent of the Wilson River area was reasonably well stocked prior to this outbreak, while over on the Salmonberry from 50 to 60 percent of the land had come back on the same scale. What part of all this was lost is not known, but Rogers fears quite a bit of it went up in smoke.

The Tillamook country in northwest Oregon is now undergoing its third searing bath of flame in twelve years. The most disastrous was the Wilson River burn of 1933 which raced over 245,000 acres, mostly virgin forests, to destroy ten billion board feet of timber, an amount equal to the entire timber cut of the United States in 1932. The second burn was in 1939. The present fire, at the time of going to press, had burned over 150,000 acres.

Along the two arterial highways to the coast extensive border plantings had been made the past two winters by schoolboy contingents, sponsored and financed by private forest operators. The objective was a solid green screen all through the great burn.

Along Gales Creek 50 thousand two-year-old Port Orford cedars were set out this year on both sides of the highway. This entire planting apparently was destroyed, with the single exception of a six-year-old cedar which has come to be called the "memorial tree." It was planted on the spot where the original Tillamook fire started on August 14, 1933—and in memory of Philip Palmer, a CCC boy from Illinois who lost his life fighting that fire.

On July 17, when flames were racing along the slope through bracken, small hardwoods and accumulated ground fuel, Orville R. Miller, Portland lumberman, stopped and trenched around the "memorial" cedar, halting the fire just short of it. Apparently the tree is now safe.

Along the Wolf Creek Highway north of Gales Creek, 130 thousand trees similarly planted were reported safe so far, though State Forester Rogers stressed that "anything could happen yet." These little trees line nine miles of highway and are just beginning to be visible to travelers.

In its earlier stages the fire swept through and destroyed 16 experimental plots set out in 1939 to test efficacy of direct seeding in Tillamook burn. This was an Oregon State College project designed to determine results of broadcast seeding immediately after a burn when the rodent population is decimated.

On July 29, the Oregon State Game Commission announced 80 thousand acres of the burn would be closed to hunting this year and the Wilson River and its tributaries closed to fishing for the remainder of the year. Biologists, after a survey of the burned area, found that many deer had died in the flames.

Fish commission wardens said they found 54 dead fish in one pool, the mortality apparently having been caused partly by exhaustion of oxygen and partly by ash residue carried into the stream by the rain of July 21.

While it was impossible to assay full damage to timber and reproduction, Forester McCulloch estimated three weeks after the fires began that possibly a million man-hours of future productive work had already been irretrievably lost.

Most foresters agree that the Tillamook forest area is one of the most productive in Oregon, with a potential maximum growth of 650 to 1,000 board feet an acre annually. Rainfall averages about 60 inches. Though most of the region is steep, all is good forest land. It carried until 1933 an old-growth stand of from 60 to 100 thousand board feet an acre, chiefly Douglasfir.

More than 12 billion feet of this timber was killed in the 1933 disaster. Shortly afterwards, many owners and operators pooled harvest resources into the Consolidated Timber Company, which under management of Lloyd Crosby went right to work salvaging fire-kill. By early 1945 it was estimated some 5 billion feet of fir had been brought out and converted, much going straight into the war effort. Timber salvage is still going on. Nearly 30 operations are working in there, or were until the fire forced shutdowns and cut deeply into production scheduled for the war. Time lost in this manner, delaying vitally needed forest materials for the Army and Navy, is counted as one of the major fire results.

Much of the fire-killed timber is still in excellent shape. Recovery of values

should continue for some time yet.

The ownership pattern is rather interesting. In the Salmonberry area the state holds 123 thousand acres, private interests the remainder, amounting to about as much. On the Wilson River side, ownership is about equal between private interests and Tillamook County, with the state out of the picture. Tillamook County has made extensive sales of fire-killed timber on its lands to a number of operators, and in several cases has sold both timber and land.

On salvage operations, about 25 thousand feet an acre have been recovered and hauled out to the mills. Obviously, that still leaves a lot of wood on the ground or standing as possible fuel for future fires. Greatest peril is the vast sea of snags through which fires travel overhead in wind. Any fire-proofing formula that is to be worked out must take the snags into account. Among foresters, Tillamook burn is a "hot baby" and none envies those who bear the burden of its protection.

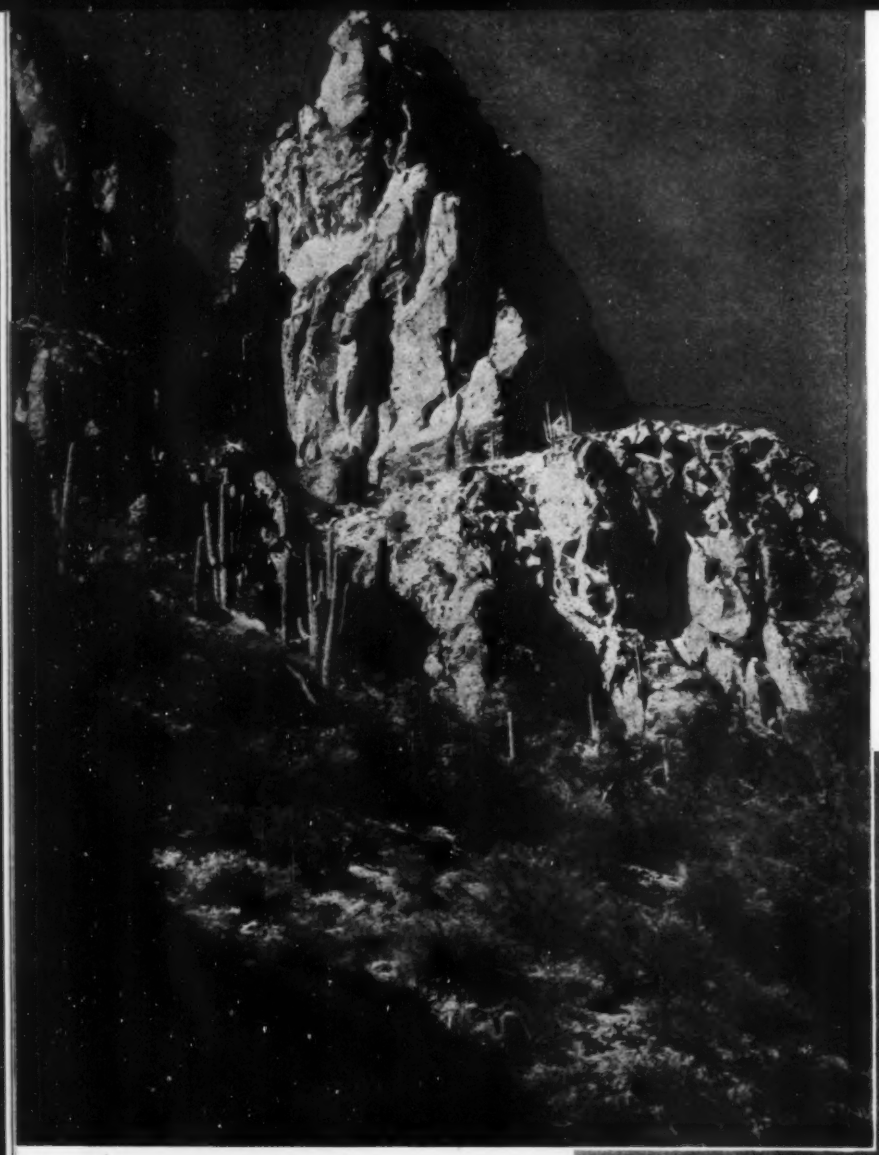
Crux of the problem seems to be to get the snags down and more of the deadwood fuel out. But there are snags by the millions. General opinion is, however, that the region can be made "protectable" by a combination of strip snag-falling and fire road construction. State and private industry have a program of that type in mind for postwar action. A large state and industry-sponsored project to reclaim the huge burn appears to be in the making.

While no one minimizes the damage done by this year's fires as well as those preceding, foresters, operators and officials see one ray of sunlight in the otherwise gloomy picture. It is that there is a noticeable public awakening to the dire loss suffered in the reproduction stands. For the first time newspapers in the Pacific Northwest are drifting away from the "green timber" or old growth theme and putting more and more emphasis on damage to tomorrow's tree crops. The setback to reproduction is disturbing Northwest editors and radio reporters.

Much credit for this change in public opinion is due the Oregon and Washington Keep Green Committees, which for five years have been hammering away on the theme that all forest fires hurt everyone. Though this year's fire record in the region may be the worst since the Keep Green program started, its leaders can rightly measure results on a long-range basis in which a thorough public conception of the fire evil will serve as a sure method of curbing man-caused fires. When the people realize fully what they are losing when the regenerating forest burns, the task should be easier.

Oregon's Governor Earl Snell (right) and State Forester Nelson S. Rogers survey a scene in the rugged Wilson River country where the third Tillamook fire is running its seemingly unstoppable course

Rock Wonderland



A marvelous example of stream-cutting is this massive miracle in rock — the red walls of Aravaipa Canyon, rising from a desert paradise

SPECTACULAR examples of erosion and weathering, the rock wonderlands of the Southwest are not only amazing phantasies carved in stone, they are also dramatic illustration of what happens when the earth's green mantle of trees, shrubs, flowers and grass fails to provide ample protection from the elements.

In the arid lands, nature is in the nude. The unleashed powers of wind, sun, rain, frost and the atmospheric gases have their way. Such scenic splendors seem far removed from the disfiguring scars of gully and slope wash, soil leaching and dust blowout; yet they are eloquent reminder of what titanic tasks these supposedly humble forces are capable, when,

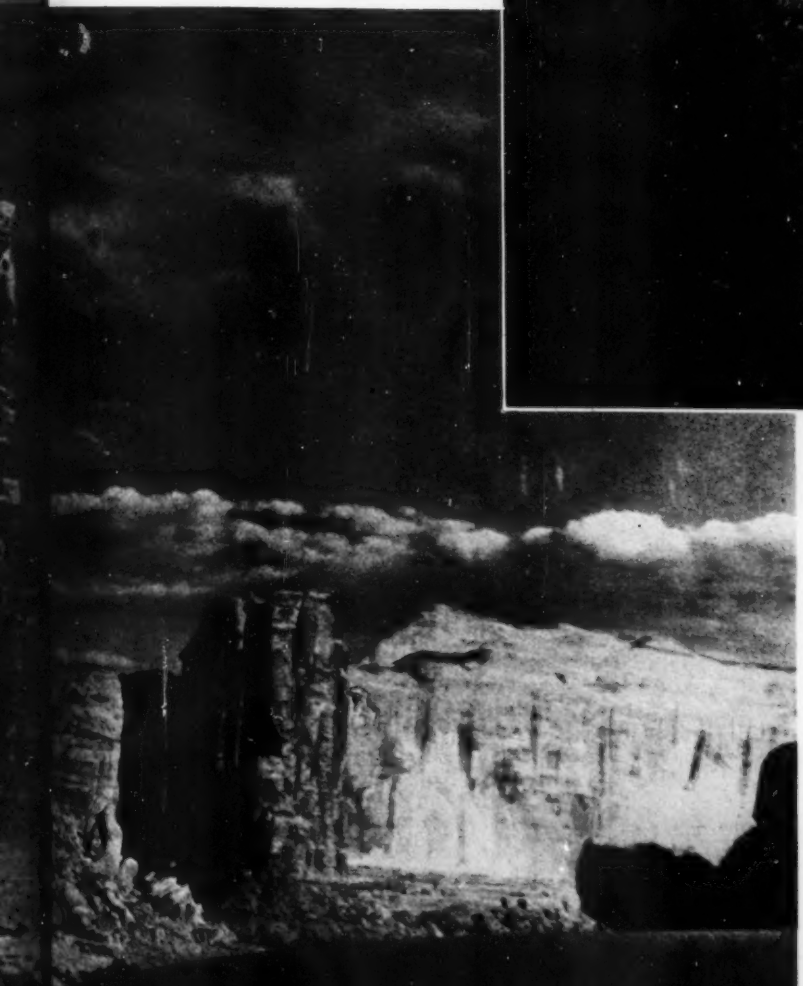
By JOHN L. BLACKFORD

Perhaps Nowhere Has the Master Artist Used So Much Color, or So Many Tools for His Sculpturing, as in Our Southwest

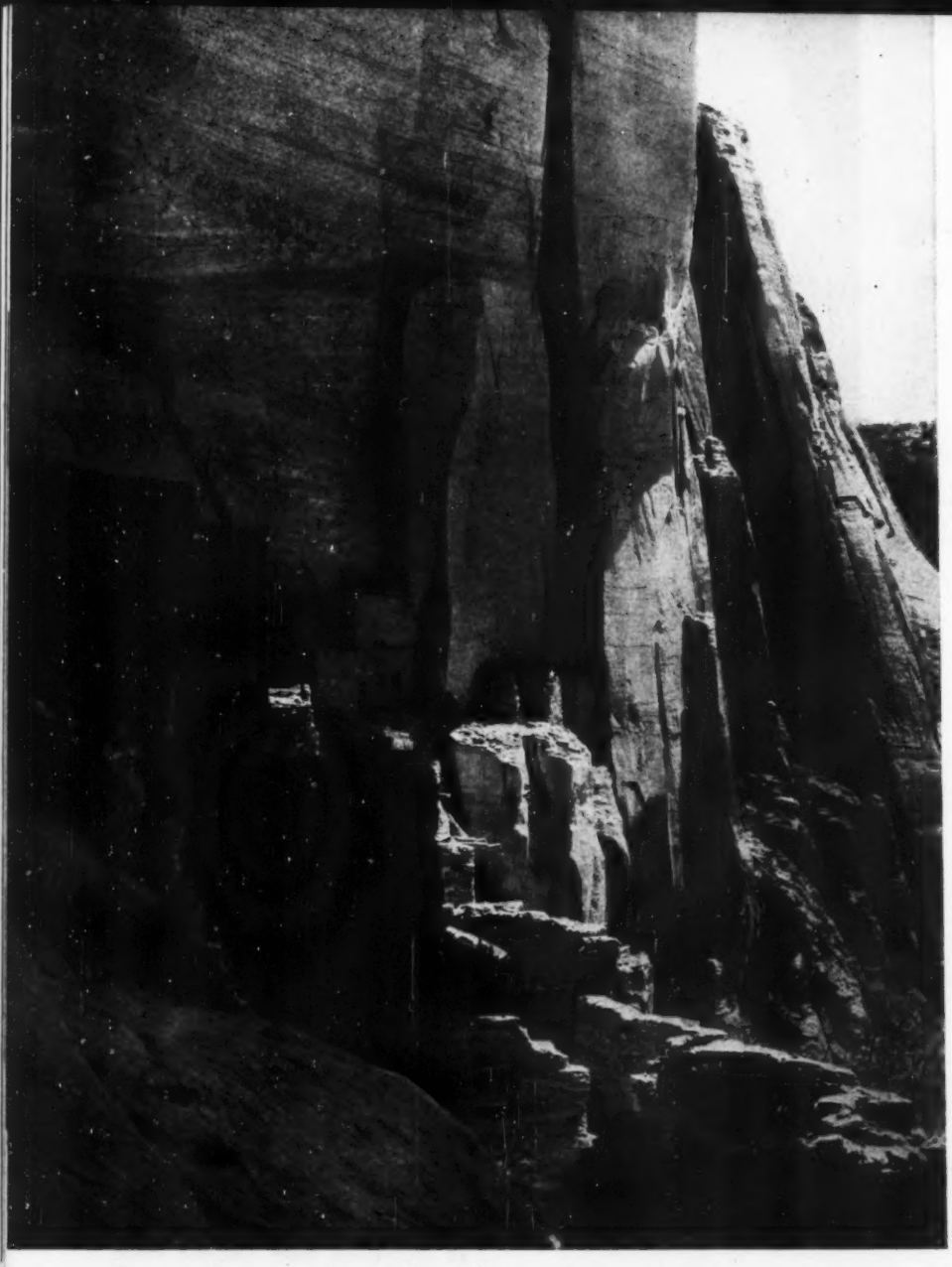
In this Chiricahua National Monument Canyon are puckish goblin faces, balanced boulders and tipsy pedestal rocks — all sculptured from volcanic stone

for climatic or other reason, forests or grasslands vanish and vegetation no longer holds them in check.

It is axiomatic that in arid lands the wind assumes a prominent role. With gnawing teeth sandstorms cut and abrade, file and groove canyon walls and exposed bedrock. Carrying fine dust beyond regions of interior drainage, the desert wind deposits thick layers of loess outside areas of deflation. Urging dunes along, it heaps and piles them in deep, cross-bedded mounds. Later, as solidified deposits and formations, these earthy mudstones and



Chiseling with frost, blasting with wind-driven sand and eroding with water, nature produced this "Totem Pole" in the northern Arizona desert



Be-ta-ta-kin cave and ruins, Navajo National Monument. This great arched cavern provided Arizona's ancient cliff-dwellers with a fortress in the rock

stouter sandstones are agreeable to the strangest and weirdest styles of carving indulged in by the elements.

Although the desert's rainfall is meager, cloudbursts, flash-floods, and intermittent streams strip softer layers and outcroppings from the land, gouge out great canyons and dissect plateaus. An elaborate and complete drainage system has been gradually imposed upon the arid Southwest, and the achievements of running water are everywhere in evidence. This is true even upon the driest desert of a desert country.

Over most of the wastelands, frost pries in the parting joints and bedding planes of the rocks; it fractures and spalls off huge blocks and tumbles them onto steep talus slopes below. Resistant strata are undermined, and the vertical cliffs and stairstep benches typical of the arid regions are formed. Extreme temperatures cause fatigue in the rocks. Atmospheric weathering participates in the creation of buttes, mesas, towers, rock temples and rimrocks.

Distinctive strata make up the geologic formations from which these wonderlands of the Southwest have been washed, etched and carved. The records of a billion years of earth-history are written in the schists, granites, limestones, shales, sandstones, muds and lavas that lie between the ancient era glimpsed in the depths of the Grand Canyon of the Colorado and the modern series exposed on the high walls of Bryce Canyon National Park.

Color, too, in brilliant and astonishing hues, paints the rock fairylands with which nature, in bizarre mood, decorated this unique section of America.

In Cave Creek Canyon in the Chiricahua National Monument of southern Arizona, sheer cliffs, their walls pocked by great caves, are painted orange-red, chrome yellow and pink, while lichens add shades of green to the unbelievable tints of the stone. Here, in a surprising mountain land near the Mexican border, puckish goblin faces, which peer and leer from soaring towers and lofty turrets, are sculptured from colorful volcanic stone. Along with balanced boulders and tipsy pedestal rocks they contribute to the topsy-turvy effect for which the bewildering slopes of the Chiricahuas are noted.

Down from the twisted, wrinkled spine of the Black Range out in California writhe the serpentine folds and creamy convolutions of Death Valley's fantastic golden badlands. In the baked, aureate mazes of this creviced waste, a lost traveler may wander thirst-crazed between lurching rock walls daubed by the surrealist artist with chocolate, blue and black; on again to clutch at crumbling, marble-like outcrops; to stagger heat-cursed down zigzag washes onto the deathly salton sink.

Be-ta-ta-kin cave and ruins in the Navajo National Monument of Arizona is flanked by spectacular columns of cross-bedded rust-red sandstone. Carved out by stream meander and wind erosion, this vast, arched cavern provided ancient cliff-dwellers with a fortress in the rock. Beneath its perfect span — loftier than the high dome of the capitol at Washington — they erected Be-ta-ta-kin, or Hillside House. The site is but one of many amazing havens afforded prehistoric peoples by the intricately dissected rocklands tributary to Tsegi Canyon.

Through a gorge of red peaks and mighty mesa walls, Aravaipa Creek in southern Arizona winds to trace a ribbon of welcome green beneath amazing cliffs and towering pinnacles. A marvelous example of stream-cutting, this massive miracle in rock thrusts spectacular shafts above the strange surrounding desert growth, and lifts them to dizzy

heights above the stream-border's verdant beauty.

The White and Vermillion cliffs range across miles of southern Utah; together they form the walls of Zion National Park, the "Rainbow of the Desert." From Jurassic red beds are chiseled hundreds of natural bridges.

Red Castle in Bryce Canyon, like the fabulous illusion of a dream, lifts brilliant orange-red turrets into a cobalt sky. Its massive base rests upon bright slopes of gleaming white and coral pink, the whole a creation that taxes the imagination. Yet this phantasy of nature has a hundred rivals in Utah's wondrous city of rock. To walk in the Queen's Garden is to walk through a magic city of Arabian Nights Tales, where spires, turrets and minarets are revealed by a step to the canyon's rim. Some pinnacles gleam purest white, but sub-surface waters have stained many other formations so that they glow with countless tints of red, pink, cream and coral.

Yes, the Southwest's wonderlands of rock are a unique and matchless heritage. Chiseling and chipping with frost, blasting with wind-driven sand and eroding with water, nature has produced many marvels in the desert. The towering Totem Pole in a hidden valley of the Navajo country of northern Arizona is as spectacular as it is beautiful. Viewed by moonlight, it thrusts up like a golden obelisk through silvery beams that flood the bewitching sands that surround it. "Inside-the-Rock" is the meaning of the alluring Navajo name for this remote and little known northern Arizona valley.

At Granite Dells, near Prescott, Arizona, the weathering of granite is graphically demonstrated. Here one may see how this durable, igneous rock maintains steep faces despite unending assaults by the elements. Defiantly it presents castellated hills, grotesque fortresses and sheer precipices after eons of wear. Rain, frost and the active gases of the atmosphere are limited to surface attacks, except for occasional unsystematized fractures in the tenacious rock.

But whether working in granite or sandstone, on the open desert of the Navajo country or within the caverned, honeycombed walls of the Valley of Fire in Nevada, which burn with an inextinguishable ember glow, the Master Artist has perhaps never elsewhere used so many tools for the sculpturing, or so many paints for His painting, as in the creation of the fantastic rock wonderlands of the Southwest.

Red Castle in Utah's Bryce Canyon lifts orange-red turrets into a cobalt sky, its massive base resting upon bright slopes of white and coral pink.

Another view of Bryce Canyon—a glorious phantasy carved by the elements. Some pinnacles are white, others glow with tints of red, pink, cream and coral

QUEER QUAKERS

On Pinon Mesa in Western Colorado, the Aspen Forest Shows its Freaks

By WILL C. MINOR

Under normal conditions, the trunk of the quaking aspen is slender and straight

FEW TREES are more symmetrical than the quaking aspen. Anyone who has hiked or ridden through some huge grove of these slender, graceful beauties can readily understand why the expression "As straight as a quakie" is as commonly heard in some sections of the country as "As straight as a string" is in others. True, a string is not always straight. It sometimes has knots tied in it. But then so do some quakies.

Quaking aspens, usually called simply quakies or quakers, normally have straight, slender trunks that taper gradually from the ground to the tip of the tree. Unlike most other trees, they rarely have forks or large branches. All this tends to give the quakies a pleasing and graceful appearance. However, a young quakie is occasionally bruised or injured in some manner. The injured youngster will then, quite often, forget all about growing straight and will instead grow into some of the most incredible shapes imaginable.

For a number of years my summer work has taken me into the spruce and aspen forests of the Colorado high country. I would occasionally run across an odd-shaped quakie that looked either like a bad dream or something that had escaped from a museum case. But it was not until last summer that I began to hunt for and photograph these fantastic freaks.

A rather amusing incident happened at one of the first of these freak quakies I ran across. I had been dashing down through a thick grove trying to net a rare butterfly, and stopped in the shade of a big quakie to catch my breath. Casually glancing aloft, I was startled into forgetting all about butterflies. The trunk of this particular tree was twelve inches in diameter and grew perfectly straight for at least thirty feet. Then it turned at a sharp right-angle and reached out for fully ten feet in a nightmarish conglomeration of loops, bends and coils, for all the world like one of the pictures of a huge snake coiled on a limb overhanding a jungle trail that I used to see in old grade school geographies.

While I was examining the tree my dog happened along and his eyes followed mine to the weirdly coiled white trunk overhead. One brief, horrified glance was enough. With a yelp of fright he fled.

But conditions are not always normal. An old injury produced this weird "snake tree"

"Mother Nature's rocking chair," probably caused by a falling tree

But there is no explanation for this twisted, oversize corkscrew

This one grew in a circle—an excellent job of self-grafting

At a discreet distance he stopped and roared forth his challenge to the tree monster to come on and fight. I have no idea what he thought he saw unless his first impression had been the same as mine, that of a huge snake coiled and ready to strike.

I did not have a camera with me that day but a tree ugly enough to frighten a dog was certainly worth photographing. So at the first opportunity I returned and shot the "snake" from several different angles.

After making a camera record of the snake tree, I began to hunt for other fantastically shaped quakies, and during my spare time that summer located and photographed several dozen of the freaks, no two exactly alike.

One fairly common type of deformed quakie I called Nature's "rocking chair." In this type the trunk, anywhere from three to fifteen inches in diameter, is straight for two to four feet above the ground. Then it turns sharply to one side and curves back almost to the earth in the shape of a swing or hammock, after which it points skyward again.

In a large number of cases this type is caused by a dead tree crashing against a small quakie. The weight of the fallen tree crushes the young one to the ground, but if it is not broken the youngster will continue to grow. Eventually its top

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Air-minded, this quaker went in for loops, twists and other antics

While its neighbor detoured several feet to avoid some object

And here is the quaker that tried to emulate a gooseneck drain pipe

THE "JEEP" SAWMILL GOES WEST

Lumber Harvester May Prove Boon to Better Cutting Practices in Second Growth Farm Woodlands of the Douglasfir Country

By ALBERT ARNST

UNDER a novel plan sponsored by Farm Foresters, Incorporated, of Longview, Washington, a portable Jackson lumber harvester will make its first commercial appearance in the Douglasfir region of the Pacific Northwest this summer. The unit is to be used primarily for custom sawing of farmer-owned second growth timber, under an operating policy which "takes out a forest harvest but leaves the woods."

Foresters concerned with sustained yield management of the region's 3 million acres of privately owned Douglasfir of less than sawtimber size, see in the harvester another opportunity for furthering better cutting practices. Farmer-owned timber, now considered a vital resource in the region's future industrial economy, should benefit by the introduction of this portable sawmill unit. Farmers in general should become increasingly conscious of woodland values once they see their tree farms as a continuing source of homegrown lumber useful in farm construction and repair.

So-called portable mills are not a recent innovation in the Douglasfir region. For many years the advantages of such mills have been apparent to small operators cutting tie timber and dimension material. Most of the units in use can be dismantled, moved and set up again in from three days to two weeks' time, and can operate profitably in logging shows of 400 thousand board feet or more. Normally, three or four sets a year have been possible with these semiportable mills, permitting a flexibility of operation adapted to smaller and scattered parcels of timber.

But the lumber harvester, designed and perfected by C. D. Jackson of Mindovi, Wisconsin, is a real *trailer* sawmill that combines portability, accuracy and capacity in a machine which for the farmer will serve the same function as a custom thresher or hay baler. It can be wheeled around to the farmer's woodlot at tree harvest time and in a half hour be cutting logs into high grade rough lumber. Best of all, it encourages the harvesting of second growth timber as a crop, through the selection of trees the removal of which benefits stand growth.

Eastern and southern foresters are well acquainted with the performance record of the lumber harvester. In northwest Florida, for instance, one harvester in little over three months produced 300 thousand board feet of lumber for 63 farmers, making 72 setups and averaging 4144 board feet a setup. From this lumber were built 15 farm dwellings, 11 barns and 18 poultry houses, in addition to repairing 13 farm dwellings, 14 barns, and numerous fences and gates, while 67 thousand board feet of the total amount cut was sold to lumber dealers by farmers and helped reduce sawing costs. The lumber produced by the harvester is rated by C. J. Telford, small mill specialist of the U. S. Forest Products Laboratory, as comparing favorably with that produced by the better small mills.

Custom sawing of farmer-owned timber is not new in the Douglasfir region, but the present method has its disadvantages. Farmers truck their logs down to the mill, wait an indefinite time for the sawyer to get around to the order and then haul the lumber back home. The slabs and sawdust, which could be used for fuelwood and barn floor dressing, are left behind.

The "jeep" harvester is designed for small operations—as little as four thousand board feet—in second growth timber. Here is a typical mill setup in Washington's Douglasfir country

Farm Foresters, Incorporated, is starting its operations with a model RM-J harvester. This improved unit is 34 feet long and 8 feet wide and has a total carriage travel of 24 feet. Eight feet of the extended 34 feet fold up when the mill is being towed. The unit weighs a little over two tons, is of one-piece electrically welded tubular construction and is carried on a single, spring mounted axle riding on two rubber tires. It can be set up in 30 minutes, has a 48-inch circular saw and can saw logs up to 28 inches in diameter, and 22 feet long. The mill has an average hourly capacity of 1,000 board feet of lumber, which includes edging on the carriage. It can be dismantled in 15 minutes and travels at a maximum speed of 45 miles an hour as a trailer unit.

The harvester is a one-man operated mill; the sawyer rides the carriage where he can view all operations simultaneously. All control mechanisms are handy to him, including the carriage feed lever, receder wheel and dog controls.

The one-man operated mill can turn out a thousand board feet of lumber an hour. Its inventor, C. D. Jackson, is shown in center of the picture at left

M. C. Bonney, who has pioneered in bringing the first lumber harvester to the Douglasfir region, is one of the three experienced foresters representing Farm Foresters, Incorporated, dedicated to the conservation harvesting of timber from tree farms. He has had eleven years' experience as a forester with federal agencies, including the U. S. Forest Service. His decision to practice "dirt" forestry is based on his belief that the lumber harvester deserves a place in the management of second growth Douglasfir.

"Timber is a farm crop," says Bonney. "Selective cutting, the kind that takes out a crop but leaves the woods, has not been possible on many scattered and inaccessible woodlots. Many small timberland owners still do not see the desirability of treating their timber as a crop. Most farmers now need lumber, but they can't see how it will pay them to go through their woods, select logs and then go to the trouble and expense of having these logs converted into lumber at some semi-stationary mill.

"But with the lumber harvester it all makes sense. The farmer can use homegrown timber for his construction needs. He can cut frequently and selectively, have the harvester turn the logs into boards right on his place. The same logs sold on the usual stumpage deal will return only about 15 percent of the value of the processed lumber product. A farmer makes more money from his timber crop if he can absorb his labor costs by harvesting it himself, as he does with his other farm crops."

Associated with Bonney in this enterprise are two other experienced farm foresters. Les K. Sims, former manager of the Washington Forest Products Cooperative Association, manages wood operations. He is well versed in markets and logging techniques. Max Dercum, a Cornell graduate, has pioneered in working out logging techniques for harvesting 16- to 24-inch second growth Douglasfir without damaging the residual stand. He brings to Farm Foresters his knowledge of "cat" and wheel-arch logging.

In addition to the lumber harvester, the equipment roster of Farm Foresters

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WAR'S TOLL OF FRENCH FORESTS

By HENRY S. KERNAN

THE scars of war in French forests are deep and wide and may not be healed for a generation, according to Professor Jean Collardet, director of studies at the *Ecole Superieure du Bois* in Paris and technical manager of the French Wood and Furniture Industries, now in this country. For France, where every stick of wood is counted in a system built up and balanced with intense care for hundreds of years, this is disastrous, he said.

In France during the four years of German occupation, Professor Collardet can speak with authority on its effect upon French forestry. Also, he was able to observe damage resulting from the Allied drive to liberate his country.

Under German occupation, he said, cutting was increased by at least 50 percent in accord with a German order issued in August 1944. French forests normally yield about 2½ billion board feet of sawlogs and 4 million cords of fuelwood a year. In 1944 the cut was nearly 4 billion board feet and 8½ million cords.

The Germans, he declared, were quick to see that in wood lay one of their most essential raw materials and made every effort to keep French sawmills going. Fully 70 percent of softwood production and 30 percent of the hardwood was requisitioned immediately. They made no effort to take over the mills, but rigidly controlled the industry and forced some operators to sell only to them.

In the Landes forest of the southwest, however, 35 logging camps of North African and Senegalese prisoners were established. Here, said Professor Collardet, the practice was to clear-cut. But in general French marking practices were observed, though cutting programs were stepped up so that they are two, three and ten years ahead of schedule.

In this connection, he brought out that state forests suffered more than private forests in that the former were more exposed to German decrees and were less capable of disregarding them. Moreover, the overcutting was concentrated in the more accessible forest lands and near large centers of population. The Vosges and Jura areas, the Landes and Normandy and Brittany suffered in particular; whereas the Alps and the Pyrenees were not as heavily cut.

An added complication, he said, was that France, a large importer of wood, received almost none during the war. Sweden and Switzerland supplied very small amounts; but the Baltic countries, formerly important sources of timber, were cut off.

Fuelwood in France is extremely important to millions of small property owners and townsfolk who depend upon it for cooking and heating. It became doubly so when coal was scarce or unobtainable. Figures on this item, according to Professor Collardet, are difficult to arrive at, but to say that they doubled is conservative. Here again cutting was concentrated. Coppices, hedges and roadside plantings have suffered much.

It seems obvious then, that cutting, although heavy, was not indiscriminate and was forced upon the French people by the conditions of war.

On the other hand, the direct military damage was purely destructive. Over a million acres, he said, were devastated or directly harmed. Forest land was cleared for airdromes, rifle ranges and camps. Bombings, explosions and combat destroyed more. Much standing timber is so full of shrapnel as to be rendered useless; other areas are still mined. In certain forests fires became impossible to control.

They were particularly widespread in the Landes. This great area of more than 2 million acres was, about a century back, drained and planted to maritime pine. Prior to the war it was one of the important turpentine producing forests of the world. Into it swarmed thousands of men to escape deportation. Later, it became a base for the underground and the "maquis."

Inevitably the fire hazard rose sharply and in four years fully 12 percent of the area was burned, Professor Collardet declared.

Woods labor during the occupation was generally abundant because so many men sought the forests in order to escape deportation. Also Spaniards, refugees from their own civil war, worked in the woods in large numbers. At present, however, the situation is reversed as men return to their regular occupations.

This has lowered the productive capacity of French forests since the Allied invasion. But the present scarcity of wood and lumber is due mainly to the fact that the Germans destroyed the transportation system as they retreated. For example, mine props, so desperately needed in the Belgian and Northern French coal fields had to be shipped from the southwest by way of the Rhone Valley for lack of bridges across the Loire.

On the other hand, said Professor Collardet, there is no real shortage of sawmills in France. A few, in the east and on the west coast were wrecked, but most of the 15 thousand mills were left standing. However, trucks, tractors, tires, machinery and spare parts are urgently needed. Mules hire for $40 a day and hay costs a dollar a pound.

It is no wonder, then, that production in the second half of 1945 will fall to 249 million board feet, less than half the figure for the same period in 1943. However, he declared, with the necessary equipment, French production can be back to normal within a year.

There seems to be little hope of importing enough wood. Forty million board feet have been requested from Sweden and some is expected from the German Black Forest, now under French control, but local needs and transportation difficulties will prevent the normal flow of wood from eastern to western Europe for many months.

Measures to bring the French forests back to normal will fall into three categories, said Professor Collardet. For one thing, cutting must be reduced so as to build up the growing stock. A 20 percent reduction over a period of five years is a reasonable schedule, he believes.

Second, a program of reforestation should be carried out to include the land devastated by war, and the regular planting of waste land continued.

Finally, the marks of war must be erased from the forest lands—bridges, roads, and buildings must be repaired; fire lines must be cleared; and erosion projects must be carried forward.

In these ways, he concluded, can good management and steady development come back to the forests of France.

THE FORESTRY SITUATION IN DELAWARE

By A. B. CROW

This article previews the findings in Delaware of the Forest Resource Appraisal of The American Forestry Association. Other states will be similarly presented in forthcoming issues.

DELAWARE is a little state, the aggregate area of its three counties amounting to 1,288,632 acres. Yet for the forester it is packed with interest. Consider the curious fact that Delaware's forests produce by growth each year about twice as much sawtimber as is being cut for commercial use in the state, while her wood-using industries actually import about seventy percent of their annual wood requirements.

Consider also that Wilmington is a port of entry for coastwise and foreign shipping, where west coast lumber and Scandinavian pulp have been landed often at prices highly competitive with local products. Some of these imports are for distribution elsewhere, some are sold within the state as lumber and some enter into manufacturing here. However, if local woodlands could be managed for maximum timber yields, it would not be necessary to rely upon other states or countries for such large quantities of wood for purely local use or manufacture.

Since Delaware is chiefly an agricultural state, most of her forests are in reality farm woodlands. With the exception of the City of Wilmington there is no community with a population exceeding 6,000, and only seven which boast more than 2,500 residents. Population density outside Wilmington is eighty per square mile for the whole state and less than sixty in the heavily wooded southern or lower section.

Woodlands occupy nearly thirty-five percent of the state's total land area. New Castle County has less than twenty percent, Kent County thirty percent, while the forests of Sussex County occupy nearly half of its area. Altogether these woodlands add up to 441,941 acres. They represent an extremely valuable natural resource, but one which is not intensively developed.

Despite heavy and largely indiscriminate cutting in the past, greatly increased during recent years due to war needs, good stumpage of hardwoods and of pine is generally available throughout Lower Delaware. Actually there are excellent stands of old growth hardwood in northeastern New Castle County, as well, but these are mostly unavailable simply because the owners do not choose to treat their estate woodlands as commercial stands.

Lumber production in 1944 was down thirty-five percent from the 1941 peak because of labor shortage, price and other difficulties, but not because of serious lack of commercial sawlogs. While extremely large pine timber is scarce, medium size trees are to be found in substantial numbers. Stands containing 2,000 board feet or more an acre occupy nearly half the forest area.

In some stands stocking is poor and uneven, merchantable trees being scattered and of low quality, due to careless cutting practices and subsequent fires. Perhaps it is unfair to use the term "careless cutting," since the wastes of harvesting so frequently grow out of market limitations. Yet the result is the same under any name. A serious problem in hardwoods is disposal of inferior trees. Younger stands in both pine and hardwood types usually are well stocked and thrifty.

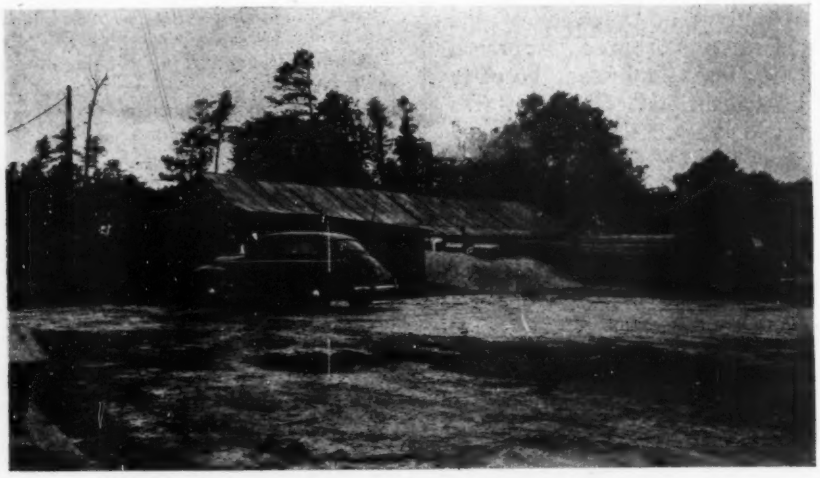
In general, timberland owners in Delaware have not yet been convinced that intensive management, such as this, is worthwhile

Growth is considerable although certainly not as great as it might be under intensive management. Softwood volumes are believed to be increasing at an average rate of 220 board feet of sawtimber an acre a year, while hardwood acres are averaging 130 board feet of sawtimber growth. Beside this larger material a great volume of wood is being added by growth to smaller trees.

Sawtimber cut, including veneers and piling, is currently about 35,000,000 board feet a year, while growth is estimated at 72,000,000 board feet. Cordwood drain is believed to be about 75,000 standard cords a year, while growth in material other than sawlogs (i.e. culls, tops and trees under sawlog size) is estimated at 185,000 cords

a year. Apparently the harvest is not closely related to the rate of natural replenishment.

Delaware has 1,000,000,000 board feet of sawtimber evenly divided between pine and hardwoods, and 4,000,000 cords of smaller wood of which thirty-seven percent is pine. Pine includes loblolly, pond, Virginia, pitch and shortleaf—loblolly and pond accounting for eighty percent. Hardwoods include oaks, red and black gum, yellow poplar, red maple and hickory. Certainly these resources constitute ample backlogs for a consistently maintained harvest of trees. Why, then, is drain currently at a low figure? There must be other reasons than shortage of labor.



Delaware's sawmills produce rough, green lumber, sawdust and fire wood. Several processing plants are needed

It should be borne in mind that these woodlands are mostly farmer-owned: eighty-five percent so by area, while industrial and estate properties account for thirteen percent, and state and federal holdings comprise the small remainder. Here, it appears, few farmers have learned to regard their timberlands as constantly producing units; they think instead in terms of long growing periods culminating in complete liquidation. Little use is made of growing forests until the trees become large enough to be sold to the local mill operators. Naturally the amount of lumber cut varies widely from year to year. There is excessive waste of other than high-grade sawlog material—and some misuse of that—and after logging the remaining stands contain little but defective hardwood trees. When stands of mixed pine and hardwood are logged, the pine frequently disappears and only hardwoods regenerate.

Timber operators in Delaware have worked in this small area for upwards of 300 years. Usually, at least in modern times, they purchase stumpage on the "lump sum" basis, cut what they can use, and utterly disregard what is left. While clear cutting is silviculturally sound practice in many such stands, certainly in the case of mature pine, the rub is that these operators do not really cut clean but leave many defective trees.

Actually, of course, the fault lies equally with the owners. In general they are not being victimized except by their own limitations. These tracts exemplify a kind of unconscious forestry, to which attention has been called in certain of the older settled agricultural sections of America, lo, these many decades. It is a kind of forest management whereby the owner simply holds on to a woodland tract for ten or twenty or thirty years, while trees grow unmolested either for good or ill. At last, seeing a stand which appears ripe for the saw he calls in the mill man and sells the timber for a lump sum in cash.

Such a situation may be explained, at least in part, by the fact that nearly half of these farms are operated by tenants, and that many of the owners live at some distance. Such owners find it simpler to follow the capital accumulation plan than to give their forest properties continuing, detailed supervision.

It is estimated that of the 6,439 farm-woodlots representing 377,803 acres of Delaware's forests, only one in eight is being managed carefully. Possibly half of all other farm woodland owners are conscious of the importance of preventing fires and of excluding livestock, and many even insist that cutting be done under certain restrictions. But in general they do not know how to go about getting the most out of their trees, or have not yet been convinced that intensive management is worthwhile.

It may be argued that such forestry has been effective in maintaining a considerable stand of sawtimber in Delaware. That, since growth currently exceeds drain in cordwood and sawtimber alike, each year sees the addition of more wood to the forest capital. Should we, then, regard the situation as unfavorable?

Waste or non-use of a resource such as wood is deplorable in Delaware as elsewhere. Whether such waste is wholly preventable may be open to question. Local opinion should be sampled, if one would arrive at a fair estimate of what might be accomplished in forest management. State Forester Taber has a few words to say on this subject, and they are interesting:

"Foresters," according to Mr. Taber, "are taught to think along well defined channels, but when one of them is permitted an unrestricted view he comes upon the question of whether this 'unconscious forestry' can be greatly improved upon. Examining the problem critically we may come to the conclusion that we know only enough to salvage what otherwise would become waste and to bend our efforts toward the best practical use of the timber that is harvested.

"It is difficult to find proof that growth is better under intensive management. None of the sample plots we have in loblolly pine indicates that thinning does more than salvage suppressed or defective trees. Getting rid of cripples, defectives and unwanted species is good practice, but we have not yet learned how to get the owner or operator to do this to his economic satisfaction. I believe a part of the answer is to create at least a 'break-even' market for the cull products. Yet, there again we must watch our step, for the moment such a market is created it invites exploitation of young immature stands and boomerangs against the forestry objective.

"My basic premise is that a favorable forestry environment must provide profitable markets for a variety of forest products, and that with complete utilization good forest practices will be the rule rather than the exception."

There is reason to believe that the pattern of markets for Delaware wood plays an important part in preventing full realization upon growth. Sawtimber is cut for a rough green lumber market. With about 125 sawmills in the state, there is but one sizeable finishing plant nearby, that being in Maryland. Several such plants are needed if local forest industries are to yield satisfactory returns from processing local timber.

There are at hand a timber treating (creosote) plant and two shipbuilding yards. Piling is now active and although

most such material is shipped out of the state, this product might be increasingly important as an aid to profitable forest handling.

While excellent material for veneer baskets, boxes and crates is grown in Delaware, the dozen plants situated here obtain nearly all of their logs from Maryland and Virginia. Presumably, if the landowners should insist upon separation of the more valuable veneer logs in the woods, mill operators would be obliged to accept such practice as reasonable.

The cordwood situation is puzzling. Large quantities of pine pulpwood are available. Two local paper mills use mostly rags; a plant manufacturing floor coverings takes a few thousand cords each year; three or four large pulp mills in neighboring states purchase wood in Pennsylvania, Maryland and Virginia; yet most of Delaware's pulpwood remains on the stump. Of course, the OPA ceiling price for Delaware of $12 per 160 cu. feet of either pine or hardwoods is a deterrent of pulpwood production, even when the alternative is to saw logs into "barked flitch." Yet such a choice serves to emphasize the lack of differentiation as to possible uses and values of the various sizes and qualities of trees.

Fuelwood is abundant, both pine and hardwoods, as salvage from logging operations and from possible improvement cuttings. Yet people are changing over to coal and oil—even the farmers—and fuelwood is a drug on the market in certain localities.

Thus it appears that profitable outlets for forest products do not measure up to the requirements for successful forestry. One may raise the question of whether forest owners might benefit from organization of a cooperative marketing agency. Under leadership of the state forester such services might be broad enough to include woodland management and sale of products. It is said that local forest owners are opposed to cooperatives. That has been true in most cases where successful "co-ops" have been established to serve farmers. The implication is simply that care must be used to start right.

To get back to the need for education in woodland management, it is said that farmers appear suspicious of efforts to teach them. Except for the brief period of CCC operation when one camp was engaged in forestry work, no more than two foresters in the department have been available to render (part time) aid to forest owners on problems of management. Although the state forester has sought to employ a full time man for such service there are no applicants for the job. While the present staff has been able, thus far, to keep abreast of owner requests, it is felt that progress would be faster if at least one forester could devote all his time to such work. Experience elsewhere indicates that demand for such instruction really can be created.

Delaware has a serious fire problem since its forests burn dangerously at certain seasons. Its fire protection organization, under direction of the state forester does well with meager funds. Annual appropriations of $10,625 provide approximately two and a half cents an acre for the work. As is usually the case where funds are inadequate, too great reliance is placed upon too few part-time employees. Although town fire departments lend aid promptly on woods fires, they are not available for the necessary mop-up work.

Altogether the fire protection setup points to a need for more men and more equipment specially adapted to local use. Annual expenditure of four and a half cents an acre should yield satisfactory results. A five-year average burn of 2109 acres annually, chiefly in young stands, is not terribly serious, except when considered in the light of the presumption that it can be radically reduced.

The forestry situation in Delaware presents a challenge to foresters and forest industry folk, and to the citizens and legislators of that state. It is not that Delaware's forests are in a bad way and need to be saved from destruction. It is rather that they are like a good machine that is idling. Her forests are in pretty fair growing condition and, considering the generally sound financial status of their owners, should be much more intensively managed than is now the case.

This challenge involves doing something about instruction of woodland owners in simple silvicultural practices which have been demonstrated worth-

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While clear cutting is sound practice in mature pine stands when properly done, as above, too many Delaware timber operators tolerate heavy breakage and fail to remove defective trees, as below

Breadbasket Seasoned With Sage

(*From page* 429)

the livestock industry of the West.

This special reseeding item does not mean a great outlay of money. Congress appropriated merely $100,000 for the program during the fiscal year 1946. In addition, another $87,500 was appropriated for special research in reseeding grass on wastelands. Seventy-five thousand is to be administered by the U. S. Forest Service in the western states for planting rye and grasses on fertile lands taken over by sagebrush and $12,500 for special research in the southern states where reseeding is also important.

But it is a beginning, a new trend to save and restore the country's grazing resources. If a third of the estimated 95 million acres of sagebrush in the West could be made productive within the next quarter century, there would be opened a forage business unknown in the history of North America.

First important plantings were made on the Fishlake National Forest after powerful plows broke up four thousand acres of sagebrush

The story behind the land of the sagebrush is one of the most dramatic tales to come out of the West. It has nothing to do with the fiction of Zane Grey or his riders of the purple sage. Yet indirectly each rider, each cow wrangler and each sheep herder, along with each horse or cow or ewe or deer has added a page to the history of a type of land which extends from Montana to Arizona.

In Utah, the story is not old. Neither is it finished. It took but a short time to write the pitiful first chapters—less than 40 years,—less than half a century to change a land of waving grass to one of sagebrush.

Those early chapters dealt with a colony of people desperately hunting a land where they might establish a home and church free from persecution. As in some other sections of the United States where pioneers settled, there was such an abundance of natural food cover for livestock that the people gave little thought of nature's cupboard ever becoming bare.

The first settlers built homes in the valleys around the Great Salt Lake in the years from 1847 to 1865. They traveled and spread throughout the enormous territory from northern Cache County to Kane County in the south, building crude dams, irrigating small tracts, settling into compact colonies, building churches and schools.

But the bulk of the land, the great areas that today are covered with sagebrush, was then a breadbasket of succulent grasses seasoned only with sage. This bread of the land was wonderful feed for cattle and sheep. It was free. You didn't have to plant or reseed. You let your livestock roam wherever they pleased.

And so, in spite of Indians and grasshoppers and years of droughts, the grazing industry of Utah began. There was no land management. Some warned that the crop of grass would not last forever, but they were termed pessimists who could not see the rose for the thorns. That was how the sheep and cowmen argued. Time enough to worry when the grass was gone.

That time came fast. Each year, with the heavy feeding of thousands of cattle, of wild horses, and sheep, the acres of grass, which were in truth acres of gold, became less plentiful. Continuous browsing, without rest for the land, weakened the root system of the tender grasses. Sagebrush, which is hardier, and which the livestock did not relish, began to spread its roots throughout the ranges.

Finally the tasty bunchgrass disappeared entirely from the land. So did the meadowlarks and the vesper sparrows and the other birds which build grassy homes to brood their young. Then in the succession of plant life downward, nature produced other forage. Rabbit brush and cheat grass came in after the better species were depleted. These were less palatable, but they were food. They gave a false hope to the land users.

But during the late nineties cattle starved by the thousands on the ranges for lack of grass. By 1900, the breadbasket of Utah had a dressing so highly overseasoned with sage that cowmen and sheepmen staged battles for the supremacy of the land which was still left in fairly good cover. It was during this era that the pulp stories of the West flourished. Tales of thieving between rival camps, killings of enemy's livestock and even killings of men spiced the saga of the sagebrush country. But that did not bring back the grass nor stop the sage from growing over the range.

There are 50 million acres of grazing land in Utah. Therefore, it was imperative that the economy of the state be built upon the livestock business. But not until the U. S. Forest Service was established in the Department of Agriculture in 1905, and large tracts of land were allotted to its supervision, was there any sort of management of the grazing industry on a scientific basis.

Then began an educational program that was like tutoring a sourdough in parlor etiquette. The sourdough insisted on spitting tobacco juice on the floor and packing his mutton in his bed. He resisted with all his strength the refinements of culture—and he is still resisting, although less vociferously.

Sheepmen could not understand why certain ranges were closed to them. Cowmen said the country was going to ruin when the government moved in and

(*Turn to page* 462)

HIGH-LEVEL PRODUCTION—POSTWAR

The big International TD-18 Diesel TracTracTor heads down the trail in a tract in Oregon. The reputation of the TD-18 is ace-high in the timber as on the battlefronts.

"Chunking" a 20-ton log out of the way with a 'dozer in a trail building operation. The crawler is the big International TD-18.

POSTWAR lumber production, as it looks now, will have to continue at a high level to fill the accumulated demand in the civilian market.

In postwar logging International TracTracTors will continue to supply low-cost, trouble-free performance. The ace-high reputation of International TracTracTors is built upon successful operation in the timber, just as on the battlefronts. Each of the four Diesel models, from the big TD-18 to the small TD-6, offers full-Diesel economy and performance in its power range. Look to these crawlers, too, for all the latest features of design and construction.

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STATE FORESTRY LEGISLATION

By PERRY H. MERRILL
President, Association of State Foresters

NOW that most all state legislatures have adjourned, it is of interest to note the large accumulation of constructive forestry legislation enacted. As the following summary will reveal, many states have instituted new projects and made initial appropriations of considerable importance:

Appropriations

Idaho doubled its appropriations for the biennium of 1947 over the 1945 biennium.

Louisiana authorized a two cents an acre tax levy in parishes for forest fire prevention, the funds to be turned over to the State Forestry Fund.

Maryland increased its forest fire appropriation by 100 percent in order to take advantage of the increased federal cooperative funds.

Minnesota increased its forest appropriation from $349,000 for 1945 to $494,488 for the year 1947.

Missouri, which in the past has operated forestry on funds from the sale of hunting and fishing licenses, made an additional state appropriation for the purpose.

New Hampshire authorized an appropriation to initiate the employment of county foresters.

Oklahoma increased its forestry appropriation from $21,000 a year to $37,500.

Pennsylvania increased appropriations for the Department of Forests and Waters from $12,500,000 to $18,500,000.

South Carolina appropriated funds for statewide forest fire protection.

Utah's appropriation was increased from $2,000 to $9,000 annually.

Vermont increased its forestry appropriation about $50,000 for the biennium and set up a salary classification for state officers.

Cutting Practices

Maryland, which two years ago passed a compulsory forest regulation act has now been joined by *California.* The California law declares the policy of the state as being to "encourage and promote and require . . . such management . . . as will maintain continuous production"; furthermore, the law provides that rules and forest management plans approved by the State Board of Forestry shall have the force of law. The forest regions of the state have been divided into four districts in each of which is a forest practice committee of five members. Four members of each committee are appointed by the governor and the fifth is a member of the State Board of Forestry. Cutting and protection rules are formulated by the committees but must have the approval of the state board.

Minnesota amended and strengthened its 1943 minimum timber cutting regulations act by more specifically restricting the cutting of white and Norway pine, birch, maple and oak; it also made the law more workable and enforcible.

Mississippi passed a "Forest Harvesting Act" which states that (1) no new faces shall be worked for naval store purposes on trees less than 10 inches in diameter unless there is left unfaced and untapped on each area of forest land, being worked, 100 or more well distributed trees, four inches or more in diameter; (2) for commercial purposes these regulations hold unless the operator submits an acceptable alternate plan of management; (3) there must be left standing per acre at least six hardwood trees of 10 inches or more in diameter of commercial species; (4) provision is made for the number and size of trees an acre in mixed hardwood and softwood stands; and (5) the Mississippi Forestry Commission is empowered to enforce the act on all areas over 40 acres.

New York state legislature passed a voluntary forest practice bill which was vetoed without comment by Governor Dewey.

Vermont authorized the State Conservation Board to hold hearings and set up forest practice rules which are purely voluntary. Sufficient funds were authorized and appropriated to employ one forester to a county.

Washington passed an act which requires the leaving of seed trees to insure regrowth on cutover areas. In case the operator violates the law the state supervisor of forestry may close the operation. He may require a bond of not more than eight dollars an acre on that part of the area where compliance has failed. The bond is to be used for restocking the area in case natural restocking has not occurred within two years after logging. Where there has been violation of the act the state supervisor of forestry may cancel a logging permit and it is not to be renewed for any part of the state until there is compliance on the part of the operator.

East of the Cascades, ponderosa pines less than 16 inches in diameter cannot be cut. West of Cascades, each owner or operator must leave at least five percent of each quarter-section stocked with trees 16 inches or more in diameter until the area is adequately stocked by natural means.

Departmental Reorganization

Arkansas established a Resources and Development Commission of 15 nonpaid members. The commission appoints an executive director. There are six divisions, each with its own director—Forestry and Parks, Agriculture and Industry, Flood Control, Water and Soil Conservation, Planning, Geology and Publicity.

California established a State Board of Forestry of seven members appointed by the governor with the advice and consent of the senate. The members represent certain interests, namely, pine industry, redwood industry, range livestock industry, agriculture, beneficial use of waters, forest land ownership and the general public at large. The board nominates and the director of Natural Resources appoints a technically trained forester as state forester.

Georgia established a Division of Conservation in which Forestry is one of four departments. It makes the forestry department the sole agency to handle federal funds for fire prevention, nursery work and private forest land management.

Louisiana repealed the law which set up a Department of Conservation and established three separate departments —the Forestry Commission under a seven man board; a Department of Wild Life and Fisheries, and a Department of Conservation.

Missouri adopted a new constitution under which the Conservation Commission has broad powers in the control of forest conservation.

New Hampshire established the office of Director of Recreation under the Forestry and Recreation Commission.

New Jersey established a Department of Conservation with a commissioner of conservation in charge of the following six divisions: Water Policy and Supply, Fish and Game, Shell Fisheries, Forestry, Geology, Parks and Historic Sites, and Navigation. The Division of Forestry has certain powers of policy sub-

ject to the approval of the conservation commissioner.

South Dakota established a Division of Forestry and Parks, to be administered by a technically trained forester within the Department of Game, Fish and Parks.

Vermont took the Publicity Service into a Development Commission from the Department of Natural Resources, leaving only the Forest Service, the Fish and Game Service and State Geologist.

Washington enacted a law which sets up a State Resources Forestry Board of seven members. It consolidated the Board of Land Commissioners, the State Capitol Committee, the State Forest Board, the Commissioner of Public Lands and the State Parks Committee.

Forest Protection

Idaho authorized the state forester to set up rules and regulations for the management and reduction of fire hazards created by the harvest and removal of forest products on forest lands.

Maine amended the portable sawmill license law so that they must be equipped with spark arresters. In the organized towns the selectmen are to appoint town forest fire wardens. The state appropriated funds to pay one-half of the town's fire fighting costs.

Nevada established the position of state forest fire warden.

South Carolina authorized the development of a forest fire protective organization in all of its 46 counties.

Vermont licensed portable sawmills and required non-resident operators to file bond.

Municipal Forests

Alabama authorized the several counties, cities and towns to acquire by purchase, gift, or bequest such tracts of land as are suitable for reforestation purposes. The Department of Conservation is authorized to supply trees free of cost to the municipal forests provided they agree to administer such lands in accordance with the practices and principles of scientific forestry as determined by the department.

Minnesota provided that the County Board by resolution could set aside tax forfeited land suitable for the purpose and dedicate it as a memorial forest to be managed on forestry principles.

Vermont amended its municipal forest law so that the state makes a grant-in-aid to a municipality of not more than $600 in the biennium, which sum can be used either for purchase or reforestation purposes. Such a forest is under the management of the state forester.

Reforestation

Connecticut extended a $50,000 appropriation for two years to aid reforestation of private lands. The state pays up to one-half the cost of reforestation of private lands not in excess of 20 acres.

Iowa passed an enabling act to cooperate with the federal government under Section 2 of the Clarke-McNary Act.

Michigan set up a special fund for reforestation purposes, the money to come from the sale of forest products from "state tax homestead lands," which have reverted to the state for non-payment of taxes and comprise at the present time about 4 million acres.

Minnesota authorized the purchase of tree planting stock by contract from nurseries on competitive bid. The trees are sold for planting on public or private lands for the establishment of auxiliary forests, woodlots, shelterbelts, erosion control, etc. A revolving fund was established for the purpose.

South Carolina, through an appropriation, makes trees available at cost up to 5 thousand to a planter. This law means the disposition of about 6 million trees.

Vermont authorized the sale of trees for reforestation at not less than one-half the cost of production to soil conservation districts for planting on private lands, in accordance with a plan of conservation for an area agreed to by the owner and the district.

State Forests

California authorized the establishment of state forests by gift, purchase, or bequest.

Oklahoma passed a law creating state forests, but made no appropriation.

Oregon repealed all acquisition laws and appropriated $100,000 which is deposited in the "state forest development revolving fund." The fund is also built up through issuance of bonds and revenues from the sale of forest products.

Taxation

Alabama passed a forest products severance tax of 30 cents a thousand feet for pine logs, 20 cents for hardwood logs and lesser amounts for pulpwood, piling, poles and turpentine. The taxes collected are credited to a special forestry fund. Not less than 85 percent of the tax collected shall be used for forest fire prevention and suppression.

Indiana increased its mill tax to five mills on each $100 worth of taxable property in the state. This tax money goes into the forestry fund.

Maine and *Vermont* each appointed a commission of nine and five men respectively to study forest taxation.

CONSERVATION IN CONGRESS

WITH the adjournment of Congress on August 1, until October 8, conservationists can take stock of legislative progress in this field since the beginning of the year. As may be supposed, with such pressing problems as prosecution of the war, reconversion, and world organization for peace, little conservation legislation as such was enacted. However, the large number of bills introduced and still pending touching this field is warrant of the interest maintained by Congressmen.

Even under the pressure to reduce expenditures, Congress held appropriations to the Agriculture and Interior Departments at the same or even higher levels. Moreover, on several problems dealing with conservation there were interesting developments.

Chief among these was the refusal of the Senate Commerce Committee to approve of the Murray Bill (S. 555) establishing a Missouri Valley Authority. Further hearings will be held before the Senate Agriculture and the Senate Irrigation Committees. In the view of some people, however, the disapproval of the Senate Commerce Committee may have dealt a fatal blow not only to the Murray Bill, but to all other bills designed to set up regional authorities.

The jurisdictional dispute between the Agriculture and Interior Departments over certain lands involved in the revested California and Oregon railroad land grant carried over to the present session of Congress with the re-introduction of bills (S. 723) by Senator Cordon and (H. R. 2593) by Congressman Ellsworth, both of Oregon. These bills are companion measures and provide that 462,000 acres in odd numbered sections within National Forests of Oregon shall be transferred to the administration of the Interior Department. A feature of the bills is a section which authorizes and directs the two Secretaries to segregate and block up, through land exchanges, all O & C lands lying within National Forest boundaries. Exchanges are to be effected on an equal-value basis and the purpose is to eliminate the checkerboard administration which now prevails in those portions of Oregon National Forest in which alternate O & C sections occur. The bills also provide that O & C lands, excepting power sites, shall be open to entry and disposition under the Mineral Land Laws of the United States.

The King-McCarran Bill (H. R. 2852-

S. 923) was introduced on April 5. It provides for a National Resources Planning Board of eleven members to conduct surveys and make recommendations with regard to natural resources. Members of the board would be appointed by the President "with the advice and consent of the Senate" and would serve without pay. The board would be required to report annually with recommendations to Congress.

The Barrett Bill to abolish the Jackson Hole National Monument, vetoed in the last session, was re-introduced but no action has been taken. Compensating payments to the State of Wyoming and guarantees of the rights of private owners within the Monument are provided for by legislation (H. R. 1292) introduced by Representative Peterson of Florida, Chairman of the House Committee on Public Lands.

A total of seven bills to readjust the rate of payments to states from receipts from national forests and other federal lands were introduced and are pending. Although there is general agreement that some such adjustment is desirable, it remains for Congress to work out a general and more uniform policy. Under existing legislation, payments to states range from 25 percent of receipts from national forests to 50 percent from public domain grazing lands and revested O & C sections. When the government's fiscal claim against the O & C lands has been liquidated the counties in which such lands are located will receive 75 percent of receipts.

In the field of wildlife, the Gerlach Bill (H. R. 3315) may become a milestone. It directs every agency of the Federal Government to provide for wildlife in consultation with the Fish and Wildlife Service on any project involving the use or diversion of water. Heretofore, government bureaus have often neglected this subject.

Action on Representative Robertson's three wildlife bills (H. R. 3459, 3460, 3461) has been postponed until fall. They provide for joint management of refuges by federal and state governments, for controlled hunting on refuges, and for the use of live decoys. Legalization of live decoys was also dealt with in the Lucas Bill (S. 518), reported favorably on July 21 by the Senate Committee on Agriculture and Forestry, with the restriction that decoys could be used only upon permits issued by the Secretary of Interior.

AFA Committee on Elections Named

The Board of Directors of The American Forestry Association has named the following members to serve as the Committee On Elections to nominate officers of the Association for 1946:

O. A. Alderman, state forester of Ohio; G. H. Collingwood, secretary of the Forest Industries Council; and David P. Godwin, assistant chief, fire control, U. S. Forest Service.

Officers to be elected for 1946 will include the president, 21 honorary vice-presidents, the treasurer and three directors. The directors to be elected—one to serve a term of four years, one three years and one two years—will fill positions now held by John W. Watzek, Jr., of Illinois, Henry P. Kendall of Massachusetts, and C. P. Wilber of New Jersey.

Though the Committee on Elections will nominate a slate, the By-Laws of the association entitle members to make nominations for any of the offices to be filled, independent of those made by the committee. The By-Laws provide that such independent nominations must be signed by not less than 25 members of the association in good standing, and must reach the Committee on Elections at 919 Seventeenth Street, N. W. Washington 6, D. C., not later than November 1, 1945. The slate, with any independent nominations made by the membership, will be offered by letter-ballot vote to the members of the association during the month of December, 1945.

Portable Cinchona Extraction Plant

The production of cinchona bark, only natural source of quinine, may be given a powerful stimulus by the invention of a portable extraction plant. Hitherto, the chief item of cost in handling bark, especially the wild bark of Latin America, has been for drying and shipping from the remote mountain regions where it grows. Now this same bark may be treated on the spot and the cost of the precious anti-malarial brought down to .0038 cents a unit, within reach of millions of poverty-stricken sufferers.

The portable extraction plant was invented by Major Robert Lee Kaye, a mechanical engineer from New Jersey.

It can produce about 170 pounds of totaquina concentrate a month. By largely ordinary water purification equipment, the chopped-up bark is agitated and circulated in sulphuric acid. Passing through an exchanger absorption system, the alkaloids are collected and removed from distillation.

This photograph shows the quantity of waste shavings needed to produce the three Pres-to-logs illustrated.

Increasing the forest yield with Pres-to-Logs

THE FARMER who grows wheat, corn, cotton, or any of a great number of agricultural crops, is able to market only a part of the plant grown upon his land. The tree farmer, too, is confronted with a like situation. His percentage of waste is less than that of most farmers, but the tree farmer, like all other farmers, is constantly seeking to develop uses for his waste material.

In the manufacture of lumber, a considerable quantity of shavings, sawdust, trims, etc., develops. This material seldom has marketable value. Today, because of long, painstaking experimentation by a Weyerhaeuser engineer, worth has been given to much of it.

More than a million tons of waste wood have been compressed into Pres-to-logs, and the production from machines now in operation will total in excess of 250,000 tons per year. A growing interest in the machine promises wide acceptance and use.

Thus has engineering and research in the lumber industry accomplished another important advance in better, more complete use of its raw material. Continued study and experimentation will bring other milestones of equal consequence.

WEYERHAEUSER FOREST PRODUCTS — TIMBER IS A CROP

WEYERHAEUSER

AN AMERICAN DRINK

By E. L. GREEN, JR.

DOWN in the North Carolina Coastal islands there is an "ugly duckling" shrub which may some day find itself a popular plant. Due to its prolific growth in the islands it is considered something of a pest. Not only must it bear this disparagement in its native land but drinking of the beverage which can be brewed from its dried leaves brands its imbiber "primitive."

The writer learned about this shrub, the yaupon, or *Ilex Vomitoria*, several years ago during a visit to the islands. I had heard of it, and although eager to study the characteristics of the shrub and "yaupon tea," found myself handicapped by the fact that natives resented the mention of either, due to some primitive superstition. Considerable persuasion finally produced a cup of the greenish brown liquid. I found the taste peculiarly pleasant and its effect as stimulating as coffee.

Yaupon tea is not a new thing, as it was used by the southern Indians, and was known as "the black drink." This drink was an important part of the religious rituals. The use by the people on the North Carolina islands probably reverts to the Indian custom. Only within the last twenty-five years have they had easy communication with the mainland. Formerly it was an all-day trip by sail boat from Cape Hatteras and Ocracoke Islands to the mainland. Supplies were hard to obtain so the people depended on the things at hand in the woodlands, gardens, the abundant sea food and the wild fowl. During the Civil War hard-put Confederate families found that yaupon made a satisfactory substitute for tea and coffee.

The islanders gather the tender leaves during the spring and summer, dry them for two or three hours in a warm oven, and chop them into small pieces. The drink is prepared by steeping a tablespoon full of prepared leaves in a cup of freshly boiled water. The decoction is strained and sweetened. It is then taken like hot tea. The stimulating quality is due to the presence of half the caffeine content of coffee.

If you live in the South you may have one of these shrubs growing in your yard. Nurserymen have found that yaupon is a good decorative shrub. Though it does not thrive as well away from its native haunts, it will develop into a hardy well-shaped shrub.

Indians and pioneer whites used Yaupon leaves as a substitute for tea

In the past few years grocery stores have begun to have a product known as *matte* on their shelves. Maté (*Ilex paraguayensis*) is a South American plant of the holly family, technically closely related to yaupon. Maté tea is used throughout Argentina, Paraguay and Brazil. Early settlers found the Indians using it and proclaiming its health-giving and stimulating qualities. The outer leaves and twigs are gathered from May through September, then are cured over a hardwood fire. They are screened to remove seeds and cut into small pieces. The drink is prepared like tea. Maté has long been known to travelers in South America, and has gained some popularity throughout the world.

READ-MOOR FARMS -- HUNTINGDON COUNTY ASSOCIATION -- M. R. PRESTRIDGE LUMBER COMPANY NATIONAL VENEER AND LUMBER COMPANY -- W. A. BENTS NURSERIES -- URBANA LUMBER COMPANY GENERAL WOOD PRODUCTS -- THE ANTHONYS -- QUAKER CITY TREE SURGEONS -- T. H. NIMICK J. HOFERT -- E. E. MITCHELL LUMBER COMPANY -- L. L. BEAN, INC. -- KOPPERS COMPANY DAWSON LUMBER AND COAL COMPANY -- HIAWATHA CLUB -- JOHN N. WINTON -- S. D. FORBES MEAD CORPORATION -- ARNOLDS MARKET -- LAMM LUMBER CO. -- CHAPMAN CONSTRUCTION CO. FORSTER MANUFACTURING COMPANY -- WHARTON SINKLER -- FOGLE BROTHERS -- K. W. HUME RAYMOND ROGERS -- G. W. GRANDIN -- YORK'S TWIN PINE CAMPS -- RUSSELL LUMBER COMPANY ST. MARIES LUMBER COMPANY -- WADE TREE EXPERTS -- CLEARWATER PROTECTIVE ASSOCIATION HARDWOOD DIMENSION MANUFACTURERS ASSOCIATION -- ROSE HILL FARM -- KEEP OREGON GREEN LOUIS BROMFIELD -- VALLEY RANCH -- HOME REALTY CO. -- MONUMENTAL PRINTING COMPANY LAURENTIAN FOREST PROTECTIVE ASSOCIATION -- THE REXALL STORE -- STATE OF ILLINOIS FINCH PRUYN AND CO. CLINIC BRUSH COMPANY GLATFELTER PAPER CO. PHILBROOK FARM INN MIDWEST WALNUT CO. IZAAK WALTON LEAGUE WESTFIR LUMBER CO. McKOWN SALES COMPANY SHORE OWNERS' ASSN. JASPER VENEER MILLS ETHERIDGE LUMBER CO. THUNDER LAKE LODGE TELL CITY SUPPLY CO. MEDFORD CORPORATION KENWOOD POULTRY FARM D. C. ENGRAVING CO.

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NORTHERN FISHES, by Samuel Eddy and Thaddeus Surber. Published by University of Minnesota Press, Minneapolis, Minnesota. 252 pages, illustrated. Price $4.00.

This is a comprehensive study on propagation and maintenance of native fishes, containing provocative discussions of lake and stream improvement and conservation. Both authors, outstanding authorities in this field, engaged in extensive research and lake and stream surveys in preparation for this work.

HIKING, CAMPING AND MOUNTAINEERING, by Roland C. Geist. Published by Harper and Brothers, New York, N. Y. 304 pages, illus. Price $3.00.

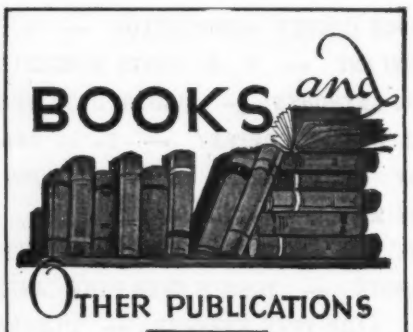
Most timely, due to wartime restriction of sufficient physical exercise and curtailment of automobile travel, this should prove effective in stimulating outdoor activities. There is detailed information on equipment, clothing, health rules, and planning trips from start to finish, with a geographical breakdown about each locale. Perfect for "trail blazers."

A PRACTICAL GUIDE TO SUCCESSFUL FARMING, edited by Wallace S. Moreland. Published by Garden City Publishing Company, New York, N. Y. 1001 pages, illustrated. Price $3.95.

An exhaustive compilation of basic principles compiled by thirty-six leading agricultural experts. Acknowledged the most complete work of its kind in a single volume, it covers the subject from selecting and financing the farm to final marketing of produce, and vital facts are included on stock and poultry raising. The book contains a wealth of information for small farmers.

CONSERVATION OF RENEWABLE NATURAL RESOURCES, a symposium by Raphael Zon, William S. Cooper, Gustav A. Pearson, Homer L. Shantz, A. E. Douglas, Charles G. Abbot, Paul B. Sears, Ellsworth Huntington, Morris L. Cooke, Samuel T. Dana, Milton D. Eisenhower, Julian F. McGowin. Published by University of Pennsylvania Press, Philadelphia. 200 pages, illustrated. Price $2.50.

Recognizing that contraction of agriculture, due to loss of many of our foreign markets, has resulted in a greater need for higher production from smaller areas, the authors have presented many fundamental aspects of the problem. Each has contributed a chapter determining the adaptability of land for agriculture, proper means of perpetuating our forests and conservation of soil and wildlife.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

ELEMENTARY FORESTRY FOR MISSISSIPPI, prepared by William Marion Kethley and associates. Published by the State Text Book Purchase and Rating Board, Jackson, Miss. 179 pages, illustrated. Price 40 cents, plus postage.

A well-written and authoritative textbook concerning every phase of forestry in the State of Mississippi. The material is well presented, with questions at the end of each chapter and many pictures to aid the teacher.

WEED CONTROL, by Wilfred W. Robbins, Alden Craft, Richard N. Raynor. Published by McGraw-Hill Book Company, Inc., New York, N. Y. 543 pages, illustrated, index. Price $5.00.

Unlike most weed publications, this book goes beyond mere identification and description of weeds to discuss analytically various methods of control.

Results of recent investigations in weed control are assembled and reviewed critically, giving the reader a basic understanding of underlying principles. Recent improvements in equipment for destroying weeds by mechanical and chemical means are explained in a practical manner to enable the farmer in any part of the country to determine methods best adapted to his locality.

INDIAN LEGENDS OF THE TE-O-NE-STA, by Benson Benley Stuart. Published by author, Tionesta, Forest County, Pa. 121 pages, illustrated. Price $3.

This is a particularly satisfying volume for those who are fond of Indian legends and narrative poems. It is written in a smooth, flowing style and contains many exceptionally beautiful passages. The author revives many old legends that have been forgotten by most people.

PLANTS WE EAT AND WEAR, by H. E. Jaques. Published by Professor H. E. Jaques, Mt. Pleasant, Iowa. 171 pages, illustrated. Price $1.50, spiral binding; $2.50 cloth binding.

This book is an informative assemblage of essential facts about the plants upon which man is directly dependent for food and clothing. It is a serviceable handbook for either the student or the person who is merely curious about the many hundreds of plant species which contribute to such a large extent to the needs of man.

AMERICAN PLANNING AND CIVIC ANUAL 1944, by Harlean James. Published by American Planning and Civic Association, 901 Union Trust Building, Washington, D. C. 172 pages. Price $3.00.

This records 1944's civic advance in the fields of planning, parks, housing, neighborhood improvement and conservation of national resources, including the addresses delivered at the citizens conference on planning, held on the fortieth anniversary of the organization of the American Civic Association.

LIFE AND WORK OF C. F. MARBUT, assembled by H. H. Krusekopf. Published by the Soil Science Society of America, Morgantown, W. Va. 271 pages, illustrated. Price $2.00.

This is a biographical account of an eminent soil scientist who revolutionized the American conception of soil development. Born on an Ozark farm, Marbut, under the typical trying conditions of pioneer life, became a great leader in the scientific world. In addition to being a tribute to the life and work of Marbut this memorial volume contains much practical information on the subject of soil conservation. In outlining his contributions to the knowledge of soil development it presents a revealing picture of the labors of those whose efforts laid the foundation of soil development.

THE VALLEY AND ITS PEOPLE, by R. L. Duffus and Charles Krutch. Published by Alfred A. Knopf, Inc., New York, N. Y. 144 pages, illustrated. Price $2.75.

This book unfolds the historic panorama of the Tennessee Valley and its people with a combination of compact text and magnificent photographs. Reflecting the author's deep convictions, this is a story of facts—facts that tell of the restoration of a nation's lost wealth and realization of its latent wealth. Recognized by even the severest critics of the New Deal as one of the outstanding achievements of the Roosevelt Administration, TVA is presented here as an incontestable accomplishment of great importance.

USCC Appoints Guy

Appointment of David J. Guy as manager of the Natural Resources Department of the United States Chamber of Commerce has been announced. He succeeds Walter DuB. Brookings, retiring

David J. Guy

after 25 years of service, who will continue to serve the Department in an advisory capacity.

A native of Minnesota, Mr. Guy received his Bachelor of Science degree in engineering from the Massachusetts Institute of Technology in 1912. After some years in private engineering he entered government service, first with the Geological Survey, then with the Federal Power Commission. He has been with the Chamber since 1927.

Germany

(*From page* 430)

preservation and protection; all forms of wood construction; and wood shipping containers.

"In all of these fields," Mr. Trayer said, "valuable information has been obtained, with the exception of shipping containers. Our techniques in this respect are far ahead of the German's, mainly because Germany's war was fought on its home grounds, so to speak, while we had to find out how to pack material so that it would reach the four corners of the earth in usable condition and for long-period storage frequently under extremely adverse weather conditions."

Just as soon as reports on all investigations are completed, Mr. Trayer said, they will be made available to the American wood-using industries.

MEMBERSHIP NOMINATIONS

Date .....

The AMERICAN FORESTRY ASSOCIATION,
919 17th Street N. W., WASHINGTON 6, D. C.:

I nominate for membership in The American Forestry Association:

Name .....
Street .....
City and State .....
Business or Profession .....
Name .....
Street .....
City and State .....
Business or Profession .....
Name .....
Street .....
City and State .....
Business or Profession .....
Nominated by .....

9-45

AWARD MADE FOR JUNE QUESTIONNAIRE

W. F. McCULLOCH, of the School of Forestry, Oregon State College, has been awarded a $25 War Bond for submitting the best reply to the questionnaire published in the June issue of AMERICAN FORESTS. The purpose of this and subsequent questionnaires is to develop ideas and suggestions as to how AMERICAN FORESTS can be more helpful to its readers.

Wilfred H. Lauer, Jr., a farm forester stationed at Winona, Minnesota, was runner-up to Mr. McCulloch. Others making excellent suggestions, according to the judges, were A. M. Sowder, Washington, D. C.; Raymond Luedtke, Campbellsport, Wisconsin; Louis Liedman, Jr., Magdalena, New Mexico; and Jose Busto Gayoso, Havana, Cuba.

In a number of cases, readers developed their interest in forest conservation—as well as ideas and suggestions—in letters accompanying their filled-in questionnaires. Outstanding among such letters, according to the judges, was one by Mrs. Elizabeth K. Owen of Beverley, Ohio.

"In 1902," Mrs. Owen wrote, "my husband and I with our two small boys joined an excursion to view the Oregon country and I was appalled at the sight of thousands of acres of burned over forests along the railroad. We located in Medford, and each summer during our eight years residence there were weeks of calm weather in which the smoke from forest fires shut off the sun to valley dwellers. Each summer we camped out for a few weeks in the mountains and on one occasion came uncomfortably close to a section where forest fires encircled and burned many campers to death. When I returned to Ohio in 1910 I was filled with a great desire to do whatever I could to arouse citizens to the realization that one of our country's greatest assets must be protected. Thus you can see that my interest in The American Forestry Association and AMERICAN FORESTS is more than skin deep."

Another letter commended by the judges was from Miss Catherine E. Hubbard, a biology instructor of Cromwell, Connecticut, in which she outlined how AMERICAN FORESTS is used in special topic work for her biology classes.

A questionnaire, similar to the one published in June, may be found on pages 463 and 464 of this issue. A $25 War Bond will be awarded for the best reply received before October 31. Awards for the July and August questionnaire will be made shortly,—August 31 and September 30, respectively.

The "Jeep" Sawmill Goes West

(*From page* 441)

includes a 4-wheel drive towing truck carrying a Waukesha industrial power unit; a two-ton logging truck and trailer; a TD-9 International wide-gauge tractor equipped with blade and drum; a wheel-arch used with the "cat"; and a "cat" trailer and a Titan chain saw. This combination of quickly portable equipment is versatile enough to handle both large and small harvesting operations and will make available to the small private owner a complement of efficient machinery not ordinarily available.

Farmers will be expected to participate in lumber harvesting. This means each farmer planning to saw lumber will be encouraged to take out trees under a plan of good forest management, will yard the logs to a landing convenient for sawing and will furnish enough labor to roll logs and remove lumber. A mill setup can be made for as little as 4 thousand board feet of sawlogs. It is expected that lumber can be custom sawed on the farm for about $13 a thousand board feet, exclusive of the farmer's labor investment.

The work of Farm Foresters is not limited to farm woodlands, of course. Industrial foresters see a place for the lumber harvester in prelogging and in clean-up work on logged areas and rights-of-way. It is the ideal equipment for producing lumber on short notice in salvage operations following fires, wind-storms, or floods. The mill also can be used in cutting out partly defective timber in park tracts, or in cutting small amounts in locations where no other sawmill unit could afford to make a set.

Farm Foresters, Incorporated, has a franchise to operate the lumber harvester in six southwestern Washington counties, all of which have good farmer-owned second growth stands. Soil conservation districts and public and private foresters are available to provide tree marking assistance in getting out logs for the mill. Agricultural leaders and foresters believe that the harvester can fill a real demand on its operating territory and hope that additional units can be brought into other parts of the Douglasfir region. Another possibility for the unit is as a source of private employment and business investment for returning war veterans desiring to get into forestry work on their own initiative. Here, on wheels, appears to be a new tool for practicing forestry in the Pacific Northwest's young growth stands.

A Forester Looks at Italy

(*From page* 426)

the areas could be planted and naturally reseeded. In many parts of the forest a volunteer understory of small and middle-sized trees already exists.

Near Pisa, and within sight of the famous Leaning Tower, Count Migliarino's forest, under management for almost two centuries, also contributed to the Allied cause, as did many other estates of the nobility. American officers, in a hurry for unusually long and straight trees, spotted California redwoods in the heart of the forest where the family had developed a sort of arboretum. Here, too, were American cypress, white ash and even horsechestnut, which, strange to say, was being grown as a timber tree. The Americans cut down 65 beautiful redwoods from 20 to 30 inches in diameter and about 100 feet high, much to the dismay of the countess.

Later, in the palace, the countess exhibited bullet marks around the dining room where an American general at dinner a few nights before, had been startled by stray shots. This area was near the front and it was not uncommon to have bullets and shellfire disturb the normal lives of the people. Many families remained in cellars and subcellars or temporary dugouts for a month or more without changing clothes and with scarcely enough to eat.

At Camaldoli, one of the most beautiful forests in Italy, an order came for several thousand poles 60 feet long with a 10-inch top. It takes a real tree to produce such a pole, in demand for bridging and to support tanks and heavy artillery in crossing swamps and muddy areas. Then another order came for 1200 poles 90 feet long with a 6-inch top. There was considerable outcry against this cutting because the monks of Camaldoli had been managing this forest high in the Appenine Mountains of Tuscany since about 1300 and, as a national shrine, it was the pride of thousands of Italians.

In this magnificent forest of silver fir, an old sawmill, dating back to 1550 and said to be the oldest in Europe, is still operating. Its single sash saw is driven by water power. There was some heavy clear-cutting on mountain sides where erosion is likely to set in. Not much timber, however, was cut this way.. Colonel Giuseppe Gangemi, Director General of Forestry, Colonel Ariberto Merendi, one of his advisers, and Dr. Aldo Pavari, chief of Italian forest research, accompanied us on an inspection of these operations. They agreed that if the forest was undisturbed along the roads and in glens and beauty spots, and if selective logging was practiced on the upper slopes, Camaldoli would not be unduly damaged while satisfying the demand for emergency war timber.

The forest of Vallombrosa, made famous by Keats, Shelley, Milton and Lord Byron because of its sylvan glades, also had been developed and managed by monks, who did an excellent job of

The author poses with forest workers in the Appenine Mountains

forestry. During the first World War, I visited the war cuttings at Vallombrosa and heard much about the forest being ruined. The same cry went up in 1945. But aside from a small amount of clear-cutting on steep mountain slopes, there was little serious damage.

Here a New Zealand circular saw was used by the British to cut large silver fir logs. There were no headblocks nor knees on the saw carriage to guide the logs, which apparently were handled with little direction or control. However, the operators seemed to understand and appreciate this contraption as it was turning out 4-inch planks and small timbers.

In this lovely forest east of Florence I found American Douglasfir growing about twice as fast as silver fir, the best native conifer. I also found redwood,

(*Turn to page* 464)

Delaware

(*From page* 445)

while elsewhere, if not yet on a large scale in Delaware. It also calls for concerted action by interested local agencies to develop a broader pattern of markets for woods products. In both of these proposed programs federal aid is available if desired.

It is always dangerous for an outside agency to pass judgment upon state functionaries. Particularly is it of dubious wisdom to offer advice to legislative bodies. Nevertheless, it must be said here that Delaware has an able, though small, state forestry staff, capable of leadership in an effort to place forestry on a sound basis, and deserving of the moral and financial support of the legislature on a scale adequate to carry forward a really significant experiment.

In point of size, situation, forest growth, and many other conditions, Delaware offers an ideal opportunity for testing the possibility of developing forestry with state, federal, and industry aid, *under state leadership.* It is to be hoped the challenge is accepted.

Queer Quakers

(*From page* 439)

will grow straight up on the opposite side of the fallen tree. Years later, long after the dead tree that caused the injury has decayed and disappeared, the quakie will still be growing in this queer, bent shape.

Thus Nature's "rocking chairs" are rather easily explained, but some of the other fantastic forms cannot be accounted for so simply. For instance, there was one medium-sized quakie growing alone in a sunlit glade quite apart from other trees. According to all the rules, this tree should be perfectly straight and normal, but instead the trunk twisted around and around like a corkscrew. One quakie had literally tied itself into a knot. Another had developed a complete circle and grown together where the trunk had crossed itself, making an excellent job of self-grafting. A few looked like the work of some amateur who had absent-mindedly grafted the top of one tree to the trunk of another and altogether different sized tree. Still others looked exactly like oversize editions of the gooseneck drain pipe on your kitchen sink.

One odd feature about these freak quakies is that only a small portion of the trunk is deformed. The trunk of the tree a short distance above the ground may be bent or misshapen or go through a series of loops and twists or other dizzy antics that would do credit to a contortionist; yet the top half of the tree will be normal and quite symmetrical.

All the photographs of this series were made of freak trees growing among thousands of normal quakies. They were taken in a comparatively small area of about one square mile on Pinon Mesa, in western Colorado.

Breadbasket Seasoned With Sage

(*From page 446*)

"robbed" them of their grazing lands. Forest Service men explained that the lands had to be rested from overgrazing so that the grass roots could make a comeback. But it was like telling a woman to dress her hair pompadour after years of parting it in the middle to save herself from growing bald. She still wanted her hair parted in the center, bald or no bald head.

Trespassing of cattle then had its heyday. The early record of the Forest Service reads like the frontispiece of a *Police Gazette* with the names of offenders who trespassed their cattle on land closed to grazing. Men sometimes took the law into their own hands, gun battles ensued wherein rangers were usually the heroes and trespassers double-dealing *hombres*.

That was a West which still flowers today in radio serial and on the motion picture screen. Authors burned the midnight oil writing books on this phase of the history of the Golden West. This sagebrush country was and is Americana, just as truly as was the gold rush of Alaska and California, the lumberjacks of Michigan and Maine, and the carpetbaggers of the South.

But finally through years of scientific research and planning, the Forest Service has at last begun to pen the pages of a brilliant ending to this sagebrush story. The final chapters are titled, "Wise Use of Land."

Experiments were made some years ago on small fenced pastures with a grass that would grow in the western climate along with sage. It is crested wheat grass, a hardy, longlived perennial bunchgrass introduced from the Siberian plains of Russia. It is a grass well suited to the semiarid northern Great Plains as well as to the foothills and mountain rangelands. Moreover, it is high in nutrients and extremely palatable.

But not until three years ago was the first important planting made. On the Fishlake National Forest of Utah, 4,000 acres of sagebrush were broken up, seeded by hand and fenced. This summer the first herd of cattle dined upon this succulent grass. Later they will be taken off and put on fresh grasslands as the rotating program of managed reseeded acres swings into production.

It is estimated that sagebrush land after reseeding will annually produce more than ten times as much beef as the unseeded areas.

Forest Supervisor Blaine Betenson of the Fishlake Forest predicts a new era for the West. "This rough country is just the place for Army jeeps and large numbers of men to settle new lands," he says.

Progressive ranchers are making application to the Department of Agriculture for reseeding their private lands. One sheepman with 1,000 head that had wintered on desert range of sagebrush and cheat grass, and were thin almost to emaciation in May, remarked that the livestock industry might as well fold up unless grass comes back to the range. He is one of the ranchers who is planning to break up 500 acres of sagebrush wilderness to seed in crested wheat grass this year.

Men like this, with the guidance of the Forest Service, will restore grass to the western range.

AUTHORS and PHOTO CREDITS

NELSON C. BROWN (*A Forester Looks At Italy*) is a member of the faculty of the New York State College of Forestry and has recently returned from Italy. HAROLD OLSON (*Tillamook Burns Again!*) is a well-known feature writer who makes his headquarters in Portland, Oregon. GRACE V. SHARRITT (*Breadbasket Seasoned With Sage*) has just returned to her home in Detroit after working on a number of story assignments in the west. HENRY S. KERNAN (*War's Toll of French Forests*) is at present working on the Forest Resource Appraisal of The American Forestry Association. JOHN L. BLACKFORD (*Rock Wonderland*) is a writer and photographer of note who calls Libby, Montana, home. WILL C. MINOR (*Queer Quakers*) writes from Fruita, Colorado. ALBERT ARNST (*The "Jeep" Sawmill Goes West*) is forestry specialist for the Soil Conservation Service. A. B. CROW (*The Forestry Situation in Delaware*) is assistant regional consultant for the Forest Resource Appraisal.

Credit for photographs used in this issue is acknowledged as follows:

American Forest Products Industries—pages 431 and 433.
Arnst, Albert—pages 440 and 441.
Blackford, John L.—pages 434, 435, 436 and 437.
British Official Photo—page 424.
Cain, S. A.—page 448 (lower).
Chase-Statler Photo—page 457.
Delaware State Forestry Dept.—pages 443, 444 and 445.
Lloyd, J. V.—page 448 (upper).
Minor, Will C.—pages 438 and 439.
Olsen, C. J.—page 429 (left and upper).
Tuci, F.—page 425.
U. S. Forest Service — pages 428, 429 (lower) and 446.

ATTENTION: MEMBERS AND FRIENDS OF THE ASSOCIATION

WE are deeply interested in having your ideas and suggestions as to how your magazine, AMERICAN FORESTS, can be more helpful to you in the many years of outdoor life before you.

The better it becomes in reflecting your interests while furthering the goals of the Association, the more you will support these goals and will recommend AMERICAN FORESTS to your friends.

Here, then, is your opportunity to give us greatly needed data about yourself, your activities and how we can help you with them. Let's work together to make our forests more useful, more enjoyable and better appreciated. Below, and on the reverse of this page, you will find a detailed questionnaire. Please fill it in fully on both sides and mail it back to us today!

IMPORTANT

A $25 War Bond will be awarded the person sending in the most complete and intelligent reply. To everyone replying will be sent a box of 50 of the Association's new FOREST FIRE PREVENTION Book Matches. To qualify your reply must be postmarked by October 31.

As a result of his reply to our June questionnaire, the Judges have awarded a War Bond to Mr. W. F. McCulloch, School of Forestry, Oregon State College, Corvallis, Oregon.

GIVE US YOUR IDEAS AND SUGGESTIONS

(CUT HERE)

1. (A) Check which of the following articles you have read — *thoroughly* (note as "T"); those which you have merely *scanned* (note as "S"); and those which you *did not read at all* (note as "N"). (B) Mark with an "X" in the column provided, the *three* articles which interested you most. There should be a "T", "S" or "N" for each article.

"X"	"TSN"		"X"	"TSN"		"X"	"TSN"	
( )	.....	Forest Exchange 418	( )	.....	Breadbasket Seasoned With Sage 428	( )	.....	The "Jeep" Sawmill Goes West 440
( )	.....	My Favorite Tree 419	( )	.....	Revealing Germany's Wood Secrets 430	( )	.....	War's Toll of French Forests 442
( )	.....	Editorial 423	( )	.....	Tillamook Burns Again 431	( )	.....	The Forestry Situation in Delaware 443
( )	.....	A Forester Looks At Italy 424	( )	.....	Rock Wonderland 434	( )	.....	State Forest Legislation . 448
			( )	.....	Queer Quakers 438			

Of all the articles you have ever read in AMERICAN FORESTS which one did you like:

Best? .....

Next Best? .....

2. Are you interested in articles, stories, news or advice on the following tree subjects? Yes ..... No .....
Check "D" if interested in doing something about any subject. Check "R" if interested only in reading about it.

D R	Trees....., Shrubs....., Flowers....., etc., and their care ..... (from garden plots to deep forests).	D R	Effects of weather....., climatic conditions..... and other "natural phenomena" on trees.
D R	Proper selection..... and care of..... shade trees for your Home....., Estate....., Club....., Community..... .	D R	Trees, Gardens, Plantings, with historic....., literary ..... or other public significance..... .
D R	Tree....., shrub..... and flower..... blights and other diseases (their prevention and care).	D R	Tree and other forest oddities....., forest freaks....., botanical changes....., evolution..... .
D R	Introduction of foreign..... or domestic..... species to new areas, grafting....., etc.	D R	Developing commercially usable fruit....., nut..... and other..... trees for pleasure or profit.
D R	Descriptions of trees....., how they are identified....., where found....., how used....., etc.	D R	Experiments in improving tree stock generally, at home and abroad.

Remarks : .....

3. How about articles, stories, news and advice on the effects of proper conservation and management of forests ....., water....., soil....., and wildlife..... and the part the layman plays therein....., Yes..... No .....
Check "D" if interested in doing something about any subject. Check "R" if interested only in reading about it.

GENERAL CONSERVATION-MANAGEMENT SUBJECTS SUCH AS:

D R	Propagation and conservation of our forsets as our one renewable natural resource.	D R	Protection of national, state and private forests from destruction or misuse.
D R	Establishment of national, state and local forests and parks, living memorials, etc.	D R	Protection of such forests and parks from undue commercialization or abuse.

(Over)

A Forester Looks at Italy

(*From page* 461)

Sitka spruce, concolor fir, white pine and many other varieties of American trees growing in friendly association with native Italian trees.

At Vallombrosa, as well as in other parts of Italy, there were many stumps three or four feet high with ruffled tops, much like a giant shaving brush. I was told they had been blown off by German dynamite. On highways used for military purposes this action may have been justified as it blocked and disorganized traffic. But in remote areas of no military significance such as Vallombrosa, it seemed a senseless thing to do. Many thousands of trees were felled in this way, leaving ugly, high stumps and, of course, blocking highways used only by farmers trying to eke out an existence in high mountain farms, vineyards and olive groves—and by a few lumbermen and foresters.

To assist the Army in getting out the lumber and timber products required for the Italian campaign, and at the same time to help reorganize the Royal Forestry Corps and draw up a long-range forestry planning program, a Division of Forestry was set up in the Allied Commission at Rome. At first, its program was complicated by the determination of the Allied Military Government to eliminate Fascism in Italy. In some provinces, the entire forest organization was promptly dismissed. Then the commission found that it could not operate without men who knew where and what the timber was and how to get it out. So the "better element" was brought back and put to work.

The commission's long-range forestry program is part of the general plan to help Italy become self-sufficient. Formulated along the following lines, from 50 to 100 years will be required to put it into effect:

1. Development of forest nurseries to produce at least 35 million trees a year and a planting program that will put unproductive mountain land to work growing trees.

2. Reorganization of the Royal Forestry Corps on a basis of merit and efficiency.

3. Expansion of Italy's forest research program under Dr. Aldo Pavari, a far-seeing research specialist and professor in the Royal Forestry College at Florence.

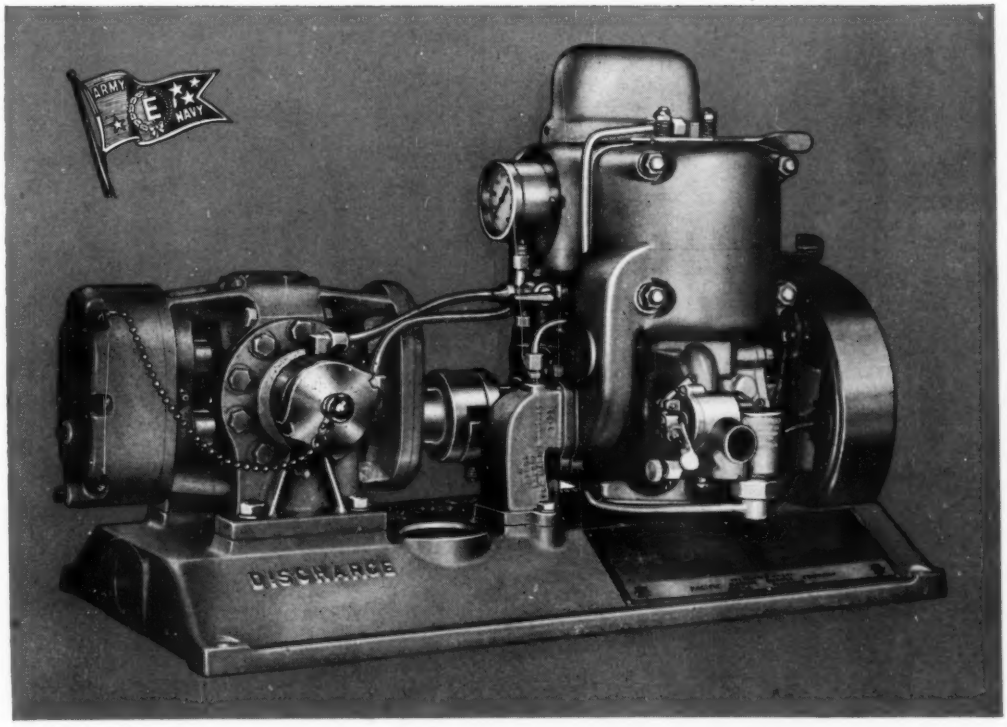
4. Provision for adequate professional and vocational training, both in the forestry school at Florence and the ranger school at Civita Ducale.

5. Repair of war damage to forests, principally by replanting as soon as possible all clear-cut areas.

In general, I found the Italian people sadly disillusioned from the pricking of the Mussolini bubble. He developed a serious case of megalomania and lead millions to believe that the glorious halcyon days of old Roman times were coming back. Now the people are worried about enough food. In their concern about the next meal, they have forgotten about grandeur. The nobility with their large estates and farms still live like kings and potentates, and farmers, if they can dodge the thousands of mines left in their fields, can eke out a living. But the great middle classes are between the upper and nether millstones. They are in a tough spot.

TYPE "Y"

Portable Pumper



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GALLONS PER MINUTE	63	59	53	46	40	20

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